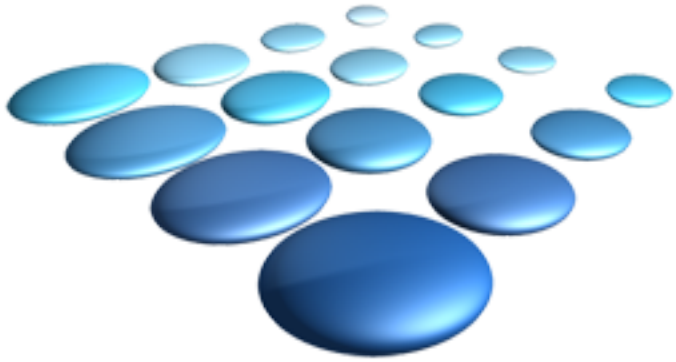

Acronis Snap Deploy 4

User Guide

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1 Introducing Acronis Snap Deploy 4

1.1 Overview

1.1.1 What is Acronis Snap Deploy 4

Acronis Snap Deploy 4 is a flexible, efficient software solution for deployment of a fully configured operating system (with or without application software and any other data) to multiple machines. Because the product uses disk imaging technology, it is ideal for rapid bare-metal installations and flexible centralized provisioning.

1.1.2 Who needs Acronis Snap Deploy 4

Acronis Snap Deploy 4 is primarily designed to be used by:

- Small and medium-size businesses:
  - IT service providers
  - Hardware retailers
- IT departments of larger corporations
- Schools and universities
- R&D and software testing labs

The enterprise features of Acronis Snap Deploy 4 (scheduled deployment, support for Preinstallation Environment, command-line interface, and scripting, to name a few) can help automate the tasks of the IT department in large enterprise environments.

1.1.3 Acronis Snap Deploy 4 infrastructure

Components of the Acronis infrastructure are installed on Windows machines. Managing the Acronis infrastructure is performed by using Acronis Snap Deploy 4 Management Console.

A reference image, called the master image, can be taken in Windows, in the Acronis environment, or in Windows Preinstallation Environment (WinPE) that contains components of Acronis Snap Deploy 4.

Deployment is performed in the Acronis environment or in WinPE that contains components of Acronis Snap Deploy 4. In either environment, Acronis Snap Deploy 4 provides the graphical user interface (GUI). In addition, command-line mode and scripting are supported in WinPE.

A dedicated bootable utility enables fully-functional deployment with GUI on a stand-alone machine (a machine that is isolated from the network or is included in a network without Acronis Snap Deploy 4 infrastructure).

1.2 What you can do with Acronis Snap Deploy 4

This section describes typical usage scenarios for Acronis Snap Deploy 4.

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1.2.1 Taking an image of the master system

First, you create the desired system configuration and save the image of the system hard disk to a network folder, detachable media (such as a USB hard drive) or removable media (such as a DVD). An image, also called a master image, is a file that contains the system in a packaged form.

Scenarios

Scenario 1

Each department in your organization, such as accounting, sales, and technical support, uses a fixed set of applications for daily work.

You create a library of master images. For example, you create one image for each department. You then deploy these images to new hardware without having to manually configure the operating system and applications.

Scenario 2

You need to deploy a standard configuration included in a master image, to machines with different hardware.

You use the separately-sold Acronis Universal Deploy add-on. This add-on configures Windows system drivers so that Windows is able to boot on dissimilar hardware. Without this add-on, the motherboard, processors, and mass-storage devices of the imaged and the target hardware must be identical. The same applies to non-Windows operating systems.

1.2.2 Deployment to specific machines (immediate, manual, and scheduled deployment)

You can perform deployment to a specific list of machines with known physical addresses (called MAC addresses). The deployment can run immediately after you set it up, on a schedule, or when you start it manually.

These ways of deployment are also known as manual deployment and scheduled deployment.

When the deployment is about to start, the software will power on the target machines with predefined MAC addresses by using the BIOS Wake-on-LAN (WOL) functionality.

Machines in another subnet can be woken up through a component called Wake-on-LAN Proxy, which is delivered with Acronis Snap Deploy 4. The machines typically boot into the PXE server that is installed in the same subnet.

Machines that do not support Wake-on-LAN can be booted into the Acronis environment manually before the deployment starts. Such machines will also be deployed, provided that they are listed for deployment.

Scenarios

Scenario 1. An organization receives a shipment of machines from a manufacturer along with the list of their MAC addresses. The IT department has to deploy the operating system to the new hardware.

Scenario 2. An Internet café, school or university lab has 100 machines with known MAC addresses. The nightly deployment of the initial standard image on these machines is needed.

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1.2.3 Deployment to any ready machines (event-driven deployment)

You can set up deployment to start when a specific number of any machines become ready. Unlike deployment to specific machines (p. 8), this way of deployment does not require knowing the MAC addresses of the machines.

The software counts how many machines have connected to the deployment server and starts deployment when the number of machines you specified (for example, 10) is connected.

This way of deployment is also called event-driven deployment or deployment upon an event.

You can specify a time-out period. After the time-out, deployment will start on the machines that are ready despite the fact that the predefined number is not reached.

Scenario

Your organization receives 100 machines from a manufacturer. You want to deploy the operating system and programs to all these machines at once.

1. You set up a deployment operation that waits until any 100 machines are ready.
2. You boot each machine into the Acronis environment, by using either Acronis bootable media or Acronis PXE (Preboot Execution Environment) Server.
3. Acronis Snap Deploy 4 uses multicasting to perform the deployment to all machines at once.

1.2.4 Stand-alone deployment

The administrator might need to perform deployment to a machine that is isolated from a network or is included in a network without an Acronis Snap Deploy 4 infrastructure (such as the deployment server or the license server). A dedicated bootable utility enables a fully-functional deployment with the graphical user interface on a stand-alone machine.

The master image for deployment can be located in a network folder or on a removable drive (such as a DVD) on the machine you are performing deployment to. The image cannot be located on the local hard disk of the machine, because deployment usually involves overwriting the contents of the disk.

The Universal Deploy add-on is unavailable for stand-alone deployment.

1.2.5 Deployment with individual deployment settings

You can set up individual deployment settings (p. 129) for a machine. These settings will override the general settings of the deployment operation (the deployment template).

Scenarios

Scenario 1

You want to perform deployment to several machines. For each machine, you want to assign a specific name, rather than an automatically-generated name.

1. You enter the MAC addresses of the machines so that they all appear in the list of machines.
2. You select each machine in the list and specify an individual setting: the machine name.
3. You set up a deployment operation. Other deployment settings will be the same for all machines.

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Scenario 2

You want to perform deployment to a big number of machines. For one of those machines, however, you need to perform deployment to the second hard disk, rather than to the first hard disk.

1. You enter the MAC addresses of all machines so that all machines appear in the list of machines.
2. You specify an individual setting for the corresponding machine: to deploy to the second hard disk.
3. You set up a deployment operation to perform deployment to the first hard disk. Deployment to that specific machine will be performed to the second hard disk.

1.2.6 User-initiated deployment (custom deployment)

Acronis Snap Deploy 4 can be configured in such a way that users will be able to deploy and re-deploy their machines with one click on the boot menu.

This way of deployment is also called custom deployment.

Scenarios

Scenario 1

Software testers have to deploy clean operating systems or preconfigured systems on test machines.

A test team leader creates a custom bootable media or a PXE package that provides a fixed set of choices on the target side. A test team member reboots a test machine and selects what to deploy from the boot menu with one click. The deployment starts immediately. The choices can be various operating systems, various editions of the same operating system, the same operating system with various settings or various applications, to name a few. The deployment proceeds independently on each machine.

Scenario 2

In a university or school lab, switching between exercises requires reconfiguring the machine entirely. Students can switch or restart exercises without the teacher's assistance. If a student messes up the machine (for example, deletes a file or changes configuration), the student can choose a self-restore option from the boot menu.

1.2.7 Deployment of a disk volume and MBR

You do not necessarily have to deploy the entire disk. Provided that the master and the target disks have a similar partitioning scheme, you can image and deploy only the system volume or only the data, depending on your needs.

When deploying a system volume, Acronis Snap Deploy 4 will automatically repair the bootability of the deployed system.

Note: *GPT volumes with Linux operating systems on UEFI machines are not supported for imaging and deployment.*

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1.2.8 Command-line mode and scripting under WinPE

Acronis Snap Deploy 4 provides a command-line utility that can be added to a bootable media based on Windows Preinstallation Environment (WinPE). The administrator can create such media on a physical drive or place it to the PXE server.

Having booted a machine into Windows Preinstallation Environment, the administrator can perform imaging or deployment in the command-line mode or execute scripts.

Scenarios

Scenario 1

The administrator needs to deploy a different image to each machine on the network.

The administrator writes a deployment script that can read the target machine's MAC address (for example, 01-02-03-04-05-06) and pull an image whose name matches the MAC address (for example, image-01-02-03-04-05-06.tib) The image can be located in any convenient location, such as a network share.

The administrator then runs the script on any number of target machines to deploy the corresponding image to each of them.

Scenario 2

The administrator needs to start imaging or deployment automatically each time a machine boots from the PXE server.

The administrator creates an imaging or deployment script, adds the script to the PE and includes the script in the **startnet.cmd** file. On booting into the PE, the operation will be performed automatically.

Scenario 3

The administrator needs to automatically execute pre-deployment operations (disk partitioning, for example) on the machines on the network.

The administrator creates a script that performs pre-deployment operations, adds the script along with deployment script to the PE and includes both scripts in the **startnet.cmd** file. On booting into the PE, both operations will be performed automatically.

1.3 Features of Acronis Snap Deploy 4

1.3.1 New: Support for UEFI

Acronis Snap Deploy 4 supports imaging and deployment for machines based on the UEFI architecture as well as BIOS machines. See Deploying BIOS-based systems to UEFI-based and vice versa (p. 119) for details of deploying BIOS-based machines to UEFI and vice versa.

Limitation: *Deployment of Linux GPT disks on UEFI machines is not supported.*

1.3.2 New: Support for Windows 8

Acronis Snap Deploy 4 supports Windows 8 operating system (all editions except for RT edition).

You can install Acronis Snap Deploy 4 on Windows 8, create and deploy master images of Windows 8.

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1.3.3 New: List of machines

Acronis Snap Deploy 4 provides the **Machines** view (p. 126). This view contains a list of all machines that you added for deployment or that have ever been deployed.

In this view, you can:

- View and edit the list of machines.
- Check which machines are ready for deployment.
- Examine the current state of the deployment operation, and the result of the last deployment.
- Add machines for subsequent deployment by specifying the machines' MAC addresses.
- Specify individual deployment settings (p. 9).
- Set up deployment for one or more machines.
- Organize machines into groups.

1.3.4 New: List of deployment tasks

Centralized deployment is performed by a deployment task. Acronis Snap Deploy 4 provides a list of deployment tasks in the **Deployment tasks** (p. 131) view.

In this view, you can:

- View and edit the list of tasks, including scheduled tasks and tasks that perform deployment when a specified number of machines are ready.
- Edit tasks; for example, to change the list of machines to perform deployment to.
- Start any task manually; for example, to perform deployment outside the normal schedule.
- Examine the current state of the task and the result of the last run of the task.

1.3.5 New: Per-deployment licensing

In addition to per-machine licensing, Acronis Snap Deploy 4 supports per-deployment licensing.

A deployment license enables you a single successful deployment to a particular machine. A machine license enables you an unlimited number of deployments to a particular machine.

For more details, see "Licensing policy" (p. 16).

Scenario

You provision machines to end users by deploying the operating system with the necessary software to a machine and then shipping the machine to the end user. Because you are planning to perform deployment to each machine only once, you want a cheaper license for the machine.

You buy a number of deployment licenses based on the number of machines that you want to provision. A deployment license becomes used only if the deployment to the corresponding machine has been successful.

1.3.6 New: Support for the VHD format

In addition to using its own format for an image, Acronis Snap Deploy 4 can perform deployment from a Virtual Hard Disk (VHD) file. Such file stores contents of one or more disks. It can be created in Windows Server 2008 and Windows 7.

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Scenario

You saved the disks of one of your machines to a VHD file by using the Windows Backup program. Now you want to deploy that machine to other machines.

When setting up the deployment, you specify the VHD file as you would specify an image file created by Acronis Snap Deploy 4. When performing the deployment, the software can change the settings for the machines being deployed.

1.3.7 New: Graphical user interface in WinPE

A bootable media based on Windows Preinstallation Environment (WinPE) now provides a graphical user interface (GUI) similar to that in an Acronis bootable media.

By using the GUI, you can take a master image and perform deployment.

You may want to use a WinPE-based media if the Acronis media cannot recognize a specific device, such as an exotic storage device.

A WinPE-based bootable media also provides a command-line utility (p. 11) for performing imaging and deployment.

1.3.8 New: E-mail notifications about deployment

When using the command-line mode (p. 11), you can set up e-mail notifications about the result of each deployment operation.

Scenario

In Scenario 1 or Scenario 2 described in “Command-line mode and scripting under WinPE” (p. 11), the administrator also wants to receive e-mail notifications about deployment.

The administrator includes in the deployment script a command that sets up the parameters of the e-mail notifications, such as the administrator’s e-mail address and the parameters of the mail server.

An e-mail notification is sent after each deployment command. Each notification contains the MAC address and IP address of the corresponding machine and whether the deployment has been successful.

1.3.9 New: Compatibility with Acronis True Image, Acronis Backup & Recovery 10, and Acronis Backup & Recovery 11 backups

Acronis Snap Deploy 4 can use as a master image a disk-level backup created by the Acronis True Image, Acronis Backup & Recovery 10, or Acronis Backup & Recovery 11 product family.

1.3.10 New: Support for multiple network adapters

A machine license is bound to the machine’s network adapter (also known as network interface card, NIC).

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If the machine has more than one network adapter, Acronis Snap Deploy 4 ensures that only one license is assigned to the machine. No extra license will be consumed if you add or remove a network adapter.

To make sure that only one license is assigned to the machine, do not remove all network adapters at once.

When using the Wake-on-LAN functionality for the machine, the software sends a special packet, called the magic packet, to all network adapters of the machine.

1.3.11 Multicast TTL and network bandwidth throttling

Deployment configuration has a parameter that specifies time to live (TTL) for multicast packets. By using this setting, you can limit the distribution of multicast packets via gateways.

By setting the permitted bandwidth, you can limit the network usage during deployment.

1.3.12 New: Falling back to unicast

To make deployment to multiple machines faster, Acronis Snap Deploy 4 multicasts the contents of the master image (the deployment stream) across the network. This way, deployment can run simultaneously on all machines even though the deployment stream is sent only once.

If the network restricts multicasting, Acronis Snap Deploy 4 can automatically switch to the use of unicast instead.

When using unicast, Acronis Snap Deploy 4 sends a copy of the deployment stream to each machine. This way, the network becomes more loaded, so the deployment process may take longer.

1.3.13 Encrypted communication

Components of Acronis Snap Deploy 4 communicate to each other by using the Secure Sockets Layer (SSL) cryptographic protocol. Encryption starts on the first (earliest) stage of the connection attempt, so all data transferred in the next steps (including data required for client authentication) is encrypted.

After the components of Acronis Snap Deploy 4 are installed, encrypted communication between the components is enabled automatically.

The contents of the master image are transferred unencrypted.

1.3.14 Password protection

Master images taken with Acronis Snap Deploy 4 can be protected with a password to prevent unauthorized deployment.

Acronis Snap Deploy 4 also supports password-protected backups created with the Acronis True Image, Acronis Backup & Recovery 10, and Acronis Backup & Recovery 11 product family.

To prevent Acronis bootable components from unauthorized execution, the bootable components in the Acronis boot menu can also be protected with a password. The user will be asked for the password when selecting a bootable component. No password is required to start the operating system on the machine.

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1.4 Supported operating systems for imaging and deployment

Acronis Snap Deploy 4 provides full-featured imaging and deployment of the operating systems listed in the table that follows.

For most operating systems, you can change settings such as the network name that the machines will have after the deployment.

Deploying an operating system requires a license. Depending on the type of operating system, you need a server license or a workstation license. For details about licensing, see “Licensing policy” (p. 16).

Operating system	Imaging and deployment	Changing settings	License type
Windows Server 2008 R2 (No Service Pack or Service Pack 1)	*Yes*	*Yes*	*Server*
Windows Server 2008 (x86, x64) (No Service Pack, Service Pack 1, or Service Pack 2)	*Yes*	*Yes*	*Server*
Windows Server 2003 (x86, x64) (No Service Pack, Service Pack 1, or Service Pack 2)	*Yes*	*Yes*	*Server*
Windows Server 2003 R2 (x86, x64) (No Service Pack, Service Pack 1, or Service Pack 2)	*Yes*	*Yes*	*Server*
Windows Small Business Server 2011 (No Service Pack)	*Yes*	*Yes*	*Server*
Windows Small Business Server 2003 (No Service Pack, Service Pack 1, or Service Pack 2)	*Yes*	*Yes*	*Server*
Windows Storage Server 2003 R2 (No Service Pack, Service Pack 1, or Service Pack 2)	*Yes*	*Yes*	*Server*
Windows Server 2003 x64 Edition (No Service Pack, Service Pack 1, or Service Pack 2)	*Yes*	*Yes*	*Server*
Windows 8 (x86, x64)	*Yes*	*Yes*	*Workstation*
Windows 8 Pro (x86, x64)	*Yes*	*Yes*	*Workstation*
Windows 8 Enterprise (x86, x64)	*Yes*	*Yes*	*Workstation*
Windows 7 Home Basic (x86, x64) (No Service Pack or Service Pack 1)	*Yes*	*Yes*	*Workstation*
Windows 7 Home Premium (x86, x64) (No Service Pack or Service Pack 1)	*Yes*	*Yes*	*Workstation*
Windows 7 Professional (x86, x64) (No Service Pack or Service Pack 1)	*Yes*	*Yes*	*Workstation*
Windows 7 Ultimate (x86, x64) (No Service Pack or Service Pack 1)	*Yes*	*Yes*	*Workstation*
Windows Vista Home Basic (x86, x64) (No Service Pack, Service Pack 1, or Service Pack 2)	*Yes*	*Yes*	*Workstation*
Windows Vista Home Premium (x86, x64) (No Service Pack, Service Pack 1, or Service Pack 2)	*Yes*	*Yes*	*Workstation*

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Windows Vista Business (x86, x64) (No Service Pack, Service Pack 1, or Service Pack 2)	*Yes*	*Yes*	*Workstation*
Windows Vista Ultimate (x86, x64) (No Service Pack, Service Pack 1, or Service Pack 2)	*Yes*	*Yes*	*Workstation*
Windows XP Home (Any Service Pack or no Service Pack)	*Yes*	*Yes*	*Workstation*
Windows XP Professional (No Service Pack, Service Pack 1, Service Pack 2, or Service Pack 3)	*Yes*	*Yes*	*Workstation*
Windows XP Professional x64 Edition (No Service Pack, Service Pack 1, or Service Pack 2)	*Yes*	*Yes*	*Workstation*
Windows 2000 Server (Any Service Pack or no Service Pack)	*Yes*	*No*	*Server*
Windows 2000 Advanced Server (Any Service Pack or no Service Pack)	*Yes*	*No*	*Server*
Windows 2000 Professional (Any Service Pack or no Service Pack)	*Yes*	*No*	*Workstation*
Windows NT/4.0 Server	*Yes*	*No*	*Server*
Windows 98/Me	*Yes*	*No*	*Workstation*
Linux (kernel: 2.4.9 and later)	*Yes*	*No*	*Server*

Acronis Snap Deploy 4 enables imaging and deployment of any PC-based operating system. However, for certain operating systems, some operations or options will not be available. For example, Windows 98/NT/ME, NT/4.0 Server, Windows 2000, and Linux (kernel: 2.4.9 and later) can be deployed only as is; on-the-fly settings adjustment is not performed.

Deploying an unrecognized operating system or a disk without an operating system requires a *workstation* license.

The Acronis Universal Deploy option is not applicable to the Windows 2000, Windows 98/NT/ME, and Windows NT/4.0 Server operating systems.

1.5 Licensing policy

Acronis Snap Deploy 4 licensing is based on the number of machines (servers or workstations) that you deploy. For example, to deploy a system on 100 machines, you need 100 licenses.

1.5.1 Machine licenses and deployment licenses

In terms of the number of allowed deployments, a license can be one of two types:

- **A machine license** enables an **unlimited number of deployments** to a particular machine. You may want to use this type of license if you perform deployment to the same machine on a regular basis.
- **A deployment license** enables a **single successful deployment** to a machine. You may want to use this type of license if you perform deployment to the same machine once or infrequently. If deployment under a deployment license fails, you can perform another deployment under the same license.

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You can obtain a license key that corresponds to a number of deployment licenses.

When setting up a deployment operation, you can choose (p. 94) whether a deployment license can be automatically used instead of a machine license, or conversely.

1.5.2 Server licenses and workstation licenses

In terms of the operating system you can deploy, a license can be one of two types:

- **A server license** enables deploying a server operating system.
- **A workstation license** enables deploying a workstation operating system. A workstation license is needed to deploy a disk or volume that does not contain an operating system, if the target machine has not been assigned a machine license before.

Linux is considered as a server operating system. See also the complete list of supported server and workstation operating systems (p. 15).

If Acronis Snap Deploy 4 fails to identify the type of operating system, the operating system is considered as a workstation operating system.

When setting up a deployment operation, you can choose (p. 94) whether a server license can be automatically used instead of a workstation license for deploying a workstation operating system.

1.5.3 Licenses for Acronis Universal Deploy

Acronis Universal Deploy is an add-on to Acronis Snap Deploy 4 and has its own license keys.

The Acronis Universal Deploy licenses are counted, used and upgraded in the same way as the Acronis Snap Deploy 4 licenses:

- Acronis Universal Deploy has licenses for server and workstation operating systems.
- A Universal Deploy license can be per-machine (allowing an unlimited number of Universal Deploy steps) or per-deployment (allowing a single Universal Deploy step).

You need one Universal Deploy license per target machine.

You do not need a license to install Universal Deploy. However, do not forget to add the Universal Deploy licenses to the license server before starting the deployment. If the licenses are not found during deployment, the Universal Deploy step will be skipped.

1.5.4 Trial version of Acronis Snap Deploy 4

The Acronis Snap Deploy 4 trial version has all the functionality of the full version.

To use the trial version, you need to obtain a trial license. You can obtain a server or workstation trial license.

A trial license enables you an unlimited number of deployments on up to five machines for 15 days.

No trial license for Acronis Universal Deploy is available.

To upgrade from the trial to full version you do not need to re-download the software. Simply buy the full licenses and import them to the license server. Acronis Snap Deploy 4 will start using a full license as soon as the corresponding trial license expires.

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1.6 Upgrading to Acronis Snap Deploy 4

To upgrade from Acronis Snap Deploy 3 to Acronis Snap Deploy 4, upgrade both the licenses and the software components.

1.6.1 Upgrading licenses

To upgrade the licenses of Acronis Snap Deploy 3, obtain the necessary number of upgrade licenses and import them to the license server.

You should obtain one upgrade license for Acronis Snap Deploy 4 (ASD4) per each license for Acronis Snap Deploy 3 (ASD3) that you have. After you import the upgrade licenses to the license server, you will be able to perform deployment to any machine by using Acronis Snap Deploy 4.

It does not matter whether the ASD3 license is itself an upgrade license for an even earlier version.

The following table illustrates how the various combinations of licenses will be upgraded. Use this table to calculate the number of upgrade licenses that you need.

You have	You obtain and import	You now can
ASD3 full license *Available*	ASD4 upgrade license	Perform deployment to any target machine
ASD3 full license *Assigned to Machine1*	ASD4 upgrade license	Perform deployment to any target machine
ASD3 upgrade license License(s) for an earlier version *Available*	ASD4 upgrade license	Perform deployment to any target machine
ASD3 upgrade license License(s) for an earlier version *Assigned to Machine1*	ASD4 upgrade license	Perform deployment to any target machine
No license	ASD4 full license	Perform deployment to any target machine

1.6.2 Upgrading components

Install the components of Acronis Snap Deploy 4 over those of Acronis Snap Deploy 3.

If all components of Acronis Snap Deploy 3 are installed on the same machine, simply run the setup program of Acronis Snap Deploy 4 on that machine. During installation, you can add the upgrade licenses.

If components are installed on different machines, upgrade the license server first, by running the setup program of Acronis Snap Deploy 4. When upgrading the license server, import the upgrade licenses. Then, upgrade other components on the machines.

Upgrading Acronis PXE Server removes any components of Acronis Snap Deploy 3 that are uploaded to the PXE server. To continue using the PXE server, you need to upload the new components (p. 65) to it.

Components of versions of Acronis Snap Deploy earlier than 3 are incompatible with Acronis Snap Deploy 4. You need to remove those components before installing Acronis Snap Deploy 4.

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1.7 Technical Support

Maintenance and Support Program

If you need assistance with your Acronis product, please go to http://www.acronis.eu/support/

Product Updates

You can download the latest updates for all your registered Acronis software products from our website at any time after logging into your **Account** (https://www.acronis.eu/my) and registering the product. See **Registering Acronis Products at the Website** (http://kb.acronis.com/content/4834) and **Acronis Website User Guide** (http://kb.acronis.com/content/8128).

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2 Understanding Acronis Snap Deploy 4

This section describes the components of the Acronis Snap Deploy 4 infrastructure and their interaction.

2.1 Terminology

The following table lists the common terms and descriptions used in this document.

Master system	The system to be deployed.
Master image (Image)	A file that contains the master system in a packaged form. The file has the .tib extension.
Online imaging	Taking a master image while the master system is in a production state (the operating system is running on the master machine).
Offline imaging	Taking an image while the master machine is booted into the Acronis environment or Windows Preinstallation Environment.
Deployment	Transferring the operating system, applications, and data from the master image file to a physical hard disk (see "Target disk"). In most cases, deployment is performed by multicasting the master image through the network.
Stand-alone deployment	Deployment to a machine isolated from a network or included in a network without Acronis Snap Deploy 4 infrastructure. Stand-alone deployment is performed locally by using a bootable component of Acronis Snap Deploy 4.
Target disk	The physical disk to be deployed to (an internal hard disk of the target machine).
Target machine (Target)	The hardware to perform deployment to.
Deployment template (Template)	Configuration parameters of the deployment operation: ▪ Path to the master image ▪ The operation mode, such as whether to use multicast or unicast and how to handle the target disk free space ▪ Settings to be applied to the deployed systems, such as machine names and user accounts ▪ Operations to be performed on the deployed systems, such as transferring files, running applications, shutting down, or restarting Once you save a deployment template, you can use it in the future.

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Administrator	The person who has rights to manage the Acronis Snap Deploy 4 infrastructure.
User-initiated deployment mode	The mode when deployment can be initiated on the side of the target machine.
User	The person on the side of the target machine who starts the user-initiated deployment. This term relates to the user-initiated deployment mode only.

2.2 Components

Acronis Snap Deploy 4 includes the following components:

Components for Windows

These are components that are installed on machines running Windows and provide Acronis Snap Deploy 4 infrastructure.

- **Acronis Snap Deploy 4 Management Console** is an administrative tool for remote access to Acronis servers and Acronis Snap Deploy 4 Management Agent.

  When disconnected from the Acronis components, the console allows only for the installation of product components on remote machines and for the creation of bootable media.
- **Acronis Snap Deploy 4 OS Deploy Server** (the deployment server) is a component that performs centralized deployment through the network with the help of Acronis Snap Deploy 4 Agents. The deployment server is installed with the **Acronis Universal Deploy** add-on, which enables hardware-independent deployment of an operating system.
- **Acronis Snap Deploy 4 Management Agent** is a component that takes an image of the master system in Windows environment under the administrator's control through Acronis Snap Deploy 4 Management Console.
- **Acronis PXE Server** allows booting machines over the network into Acronis Snap Deploy 4 Agent, Acronis Snap Deploy 4 Master Image Creator, or Windows Preinstallation Environment. The machines must support PXE. Using Acronis PXE Server considerably reduces the time required for booting multiple machines as compared to using bootable media. It also eliminates the need to have a technician onsite to install the bootable media into the system that must be booted.
- **Acronis Wake-on-LAN Proxy** is a component that enables Acronis Snap Deploy 4 OS Deploy Server to wake up the target machines located in another subnet.
- **Acronis Snap Deploy 4 License Server** is a component that tracks licenses of Acronis products.

Bootable components

These are components that are available in the Acronis environment or Windows Preinstallation Environment. A machine must boot into the corresponding component when you need to perform imaging or deployment.

- **Acronis Snap Deploy 4 Agent** is a bootable component that performs deployment to a target machine under the control of Acronis Snap Deploy 4 OS Deploy Server.

  There are two ways to load Acronis Snap Deploy 4 Agent on target machines: locally from bootable media or remotely by using Acronis PXE Server.

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- **Acronis Snap Deploy 4 Master Image Creator** is a bootable, locally controlled component that creates an image of the master system.

  There are two ways to load Acronis Snap Deploy 4 Master Image Creator on a master machine: directly from bootable media or remotely by using Acronis PXE Server.
- **Acronis Snap Deploy 4 Standalone Utility** is a bootable component that enables fully-functional deployment with a GUI on a stand-alone machine (a machine isolated from the network or included in a network without Acronis Snap Deploy 4 infrastructure).

  The only way to load Acronis Snap Deploy 4 Standalone Utility is from an Acronis bootable media.
- **Acronis System Report** is a bootable component that collects information about the machine and saves this information to a locally-attached USB drive.

  There are two ways to load Acronis System Report: directly from an Acronis bootable media or remotely by using Acronis PXE Server.

2.3 Support for file systems and storage media

2.3.1 Supported file systems

Acronis Snap Deploy 4 provides full-featured imaging and deployment of the following file systems:

- FAT16
- FAT32
- NTFS
- Ext2
- Ext3
- Ext4
- ReiserFS
- Reiser4
- Linux SWAP
- XFS
- JFS

Acronis Snap Deploy 4 can perform imaging and deployment of corrupted or unsupported file systems by using a sector-by-sector approach. This approach usually leads to a bigger size of the master image and makes the imaging or deployment process longer. A volume with an unsupported file system cannot be resized during deployment.

2.3.2 Supported media

Acronis Snap Deploy 4 Master Image Creator and **Acronis Snap Deploy 4 Management Agent** can save an image:

- In a network folder.
- On an internal hard disk of the master machine.
- On USB and FireWire (IEEE-1394) storage devices (hard drives, flash drives) attached to the master machine.
- On DVD+R/RW, DVD-R/RW, CD-R/RW, or recordable Blu-ray Discs (BD-R, BD-RE) loaded in the media drive of the master machine.

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A sizeable image can be split between multiple media automatically.

Acronis Snap Deploy 4 OS Deploy Server can deploy images located:

- In network folders.
- On an internal hard disk of the deployment server.
- On USB and FireWire (IEEE-1394) storage devices (hard drives, flash drives) attached to the deployment server.
- On DVD+R/RW, DVD-R/RW, CD-R/RW, or recordable Blu-ray Discs (BD-R, BD-RE) loaded in the media drive of the deployment server.

The best practice is keeping images on the deployment server's hard disk. This minimizes network traffic during deployment.

The image created on removable media has to fit into one media disk. To deploy an image spread over two or more CDs, DVDs or other media, copy all parts of the image to the same folder on the deployment server or to a network folder.

Acronis Snap Deploy 4 Standalone Utility can deploy images located:

- In network folders.
- On USB and FireWire (IEEE-1394) storage devices (hard drives, flash drives) attached to the managed machine.
- On DVD+R/RW, DVD-R/RW, CD-R/RW, or recordable Blu-ray Discs (BD-R, BD-RE) loaded in the media drive of the managed machine.

The image created on removable media has to fit into one media disk. To deploy an image spread over two or more CDs, DVDs or other media, copy all parts of the image to the same folder on an external drive or to a network folder.

2.4 Supported types of disk and firmware interface

Acronis Snap Deploy 4 can perform imaging and deployment of **basic disks** whose partitioning scheme is **master boot record (MBR)** or **GUID Partition Table (GPT)**.

You can perform deployment to a basic MBR or GPT disk as well as an empty or uninitialized disk. Dynamic disks currently are not supported for imaging and deployment.

Both **basic input/output system (BIOS)** and **Unified Extensible Firmware Interface (UEFI)** firmware interfaces are supported for master and target machines.

Tip: *To perform imaging and deployment of systems that are not supported by Acronis Snap Deploy 4, such as dynamic disks, you can use the Acronis Backup & Recovery 11 product. Namely, you can "image" the machine by creating a disk-level backup of it, and then perform "deployment" to the target machine by recovering data from the backup. For more information, including the list of supported operating systems, refer to Help for Acronis Backup & Recovery 11.*

2.5 Usage

This section gives a general idea of using the product and does not contain the detailed instructions on how to perform operations. Nevertheless, advanced users are welcome to use this section as a step-by-step quick start guide. The details can be found in the further sections.

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2.5.1 Offline imaging

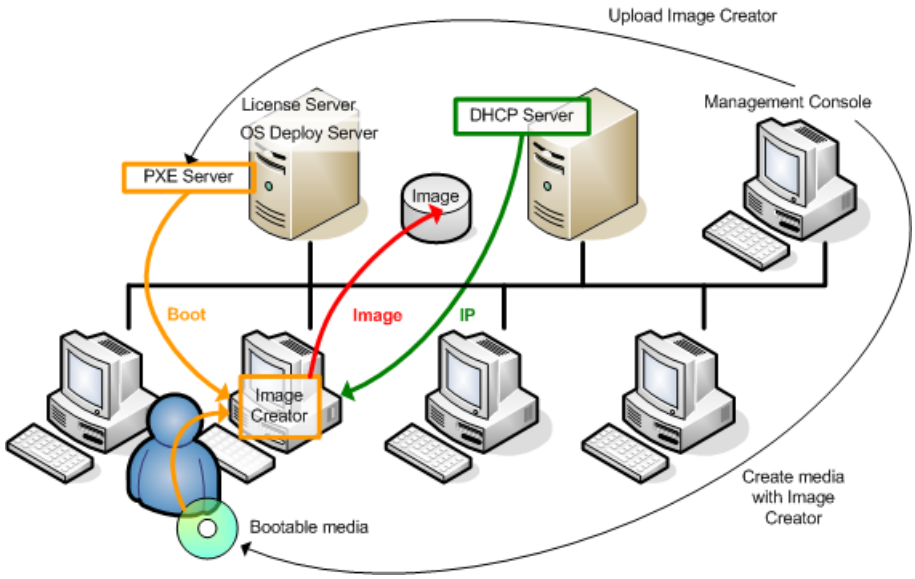
Offline imaging means that the master system is stopped and the master machine boots into the Acronis environment or into Windows Preinstallation Environment (WinPE).

To perform offline imaging

1. Configure the master system.
2. Install Acronis Snap Deploy 4 Management Console.
3. Do one of the following:
   - Create a bootable media (either an Acronis media or a WinPE-based media) with Acronis Snap Deploy 4 Master Image Creator.

   OR

   - Install Acronis PXE Server, connect the console to the PXE server and upload Acronis Snap Deploy 4 Master Image Creator.
4. Depending on your choice in the previous step, boot the machine into Acronis Snap Deploy 4 Master Image Creator from the bootable media or from the PXE server.
5. On the master machine, follow the instructions of the Master Image Creator wizard to configure and launch the imaging operation. The image can be saved in a network folder, on detachable media (such as a USB drive), or removable media (such as a DVD). To access the network from the bootable environment, you must have a DHCP server or configure the network settings of the master machine manually.



Offline imaging

2.5.2 Online imaging

Online imaging means that the master system is imaged live (without restarting the machine or suspending operations). Online imaging can be performed remotely whenever you need. The disadvantage is that you have to install imaging software that is included in the master image. This is not always rational.

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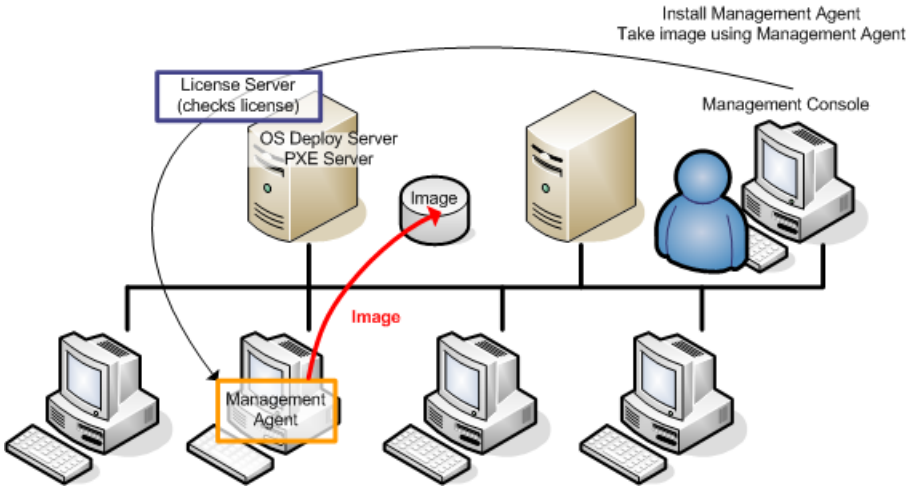
To perform online imaging

1. Configure the master system.
2. Install Acronis Snap Deploy 4 Management Console.
3. Install Acronis Snap Deploy 4 Management Agent on the master system either locally by using the setup program, or remotely by using Acronis Snap Deploy 4 Management Console.

   After Acronis Snap Deploy 4 Management Agent is installed, you can image the master system online (without restarting the machine) at any time.
4. Connect the console to the master system, click **Create image -> Next -> A master image**. Follow the instructions of the Master Image Creator wizard to configure and launch the imaging operation. The image can be saved in a network folder, on detachable media (such as an USB drive) or on removable media (such as a DVD).



Online imaging

2.5.3 Deployment

This section illustrates the Acronis components functionality by the example of deployment that you start manually. For details about the ways of deployment, see “Deploying a master image” (p. 79).

This procedure presumes that you have installed Acronis Snap Deploy 4 Management Console and created a master image.

To perform deployment

1. Install Acronis Snap Deploy 4 License Server. Import licenses to the license server. Install Acronis Snap Deploy 4 OS Deploy Server.
2. Do one of the following:
   - Create bootable media (either Acronis media or WinPE-based media) with Acronis Snap Deploy 4 Agent.

   OR

   - Install Acronis PXE Server, connect the console to the PXE server, and then upload Acronis Snap Deploy 4 Agent.
3. Depending on your choice in the previous step, boot the target machines into Acronis Snap Deploy 4 Agent from the bootable media or from the PXE server.

   You must have a DHCP server or configure the network settings of the target machines manually to enable the target machines to connect to Acronis Snap Deploy 4 OS Deploy Server.

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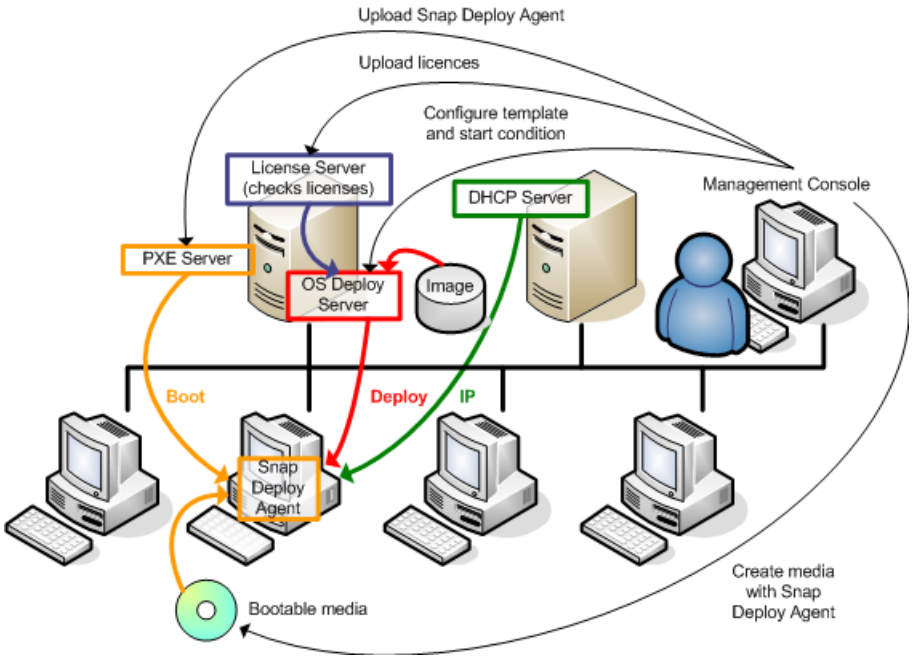
4. Connect the console to Acronis Snap Deploy 4 OS Deploy Server. Go to the **Machines** view.
5. Make sure that the target machines are displayed in the list and have the **Ready** state. This means that the machines are connected and ready for deployment.
6. Select the machines, click **Deploy image** on the toolbar, and then follow the Create Deployment Task Wizard instructions to configure and launch the deployment operation. When prompted about when you want to run the deployment, select **Now**.



Deployment that starts manually

2.6 What is Acronis Universal Deploy

This section describes the Acronis proprietary technology that helps you to deploy and boot Windows on dissimilar hardware. Acronis Universal Deploy saves you from configuring a new master system for each make of hardware you need to perform deployment to.

If you plan to deploy Windows to multiple machines that are identical to each other but differ from the master machine hardware, deploy the master image to one of the identical machines by using Acronis Universal Deploy. This will adjust Windows to the dissimilar hardware. Then, create a master image of the adjusted system and deploy that image to the identical machines.

The Acronis Universal Deploy option is not available in the stand-alone deployment (p. 9) mode.

2.6.1 Acronis Universal Deploy purpose

An image of a system can be deployed easily on the hardware where it was created or to identical hardware. However, if you change a motherboard or use another processor version, the deployed system could be unbootable. An attempt to transfer the system to a new, much more powerful machine will usually produce the same result. This is because the new hardware is usually incompatible with the most critical drivers included in the image.

Using Microsoft System Preparation Tool (Sysprep) does not solve this problem, because Sysprep permits adding drivers only for Plug and Play devices (such as sound cards, network adapters, and video cards). As for the system Hardware Abstraction Layer (HAL) and mass-storage device drivers,

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they must be identical on the source and the target machines; see Microsoft Knowledge Base, articles 302577 and 216915.

Acronis Universal Deploy technology provides an efficient solution for hardware-independent system deployment by adding the crucial Hardware Abstraction Layer (HAL) and mass-storage device drivers.

2.6.2 Acronis Universal Deploy general principles

Automatic HAL and mass-storage drivers selection

Acronis Universal Deploy searches the Windows default driver storage folders (in the master image being deployed) for HAL and mass-storage device drivers and installs drivers that better fit the target hardware. You can specify a custom driver repository (a network folder or a CD) which will also be used for driver searches.

Tip: *The Windows default driver storage folder is determined by the* ***DevicePath*** *value in the* ***HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion*** *registry key. This storage folder is usually WINDOWS\inf.*

Manual selection of mass-storage device driver

If the target hardware has a specific mass-storage controller (such as a SCSI, RAID, or Fibre Channel adapter) for the hard disk, you can install the appropriate driver manually, bypassing the automatic driver search-and-install procedure.

Installing drivers for Plug and Play devices

Acronis Universal Deploy relies on built-in Plug and Play discovery and configuration process to handle hardware differences in devices that are not critical for the deployed system startup, such as video, audio and USB. Windows takes control over this process during the logon phase, and if some of the new hardware is not detected, you will have a chance to install drivers for it later manually.

2.6.3 Acronis Universal Deploy and Microsoft Sysprep

Acronis Universal Deploy is not a system preparation tool. You can apply it to any system image created by Acronis products, but you cannot apply it to images of systems prepared with Microsoft System Preparation Tool (Sysprep).

2.6.4 Getting Acronis Universal Deploy

Acronis Universal Deploy is an add-on to Acronis Snap Deploy 4. It is purchased separately and has its own license.

For information about purchasing Universal Deploy, visit the Acronis Snap Deploy Web page.

2.7 How to

How to image a machine without installing additional software to it?

Perform offline imaging (p. 68).

How to image a machine without restarting it?

Perform online imaging (p. 68).

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How to prepare deployment tools?

Create bootable media (p. 58) with Acronis Snap Deploy 4 Agent. The machines will boot from these media.

How to deploy an image to a list of specific machines?

Use the **The machines listed below** option in the Create Deployment Task wizard (p. 102). Specify the list of machines to perform deployment to.

How to deploy an image to a number of any machines?

Use the **Any machines ready for deployment** option in the Create Deployment Task wizard (p. 106). Specify the number of machines to wait for.

How to deploy an image in the absence of a network connection?

Use Acronis Snap Deploy 4 Standalone Utility (p. 112).

How to enable users to start deployment on their own?

Set up user-initiated deployment (p. 113).

How to view the status of mass deployment?

Open the **Deployment tasks** view (p. 131).

How to view the list of machines?

Open the **Machines** view (p. 126).

How to add or remove licenses for deployment?

Open the **Licenses** view (p. 54).

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3 Getting started with Acronis Snap Deploy 4

This section describes how to install Acronis Snap Deploy 4 and perform a simple deployment.

By following the procedures in this section, you will:

a) Install and start Acronis Snap Deploy 4.

b) Create a master image of a machine.

c) Deploy the master image to the same or a different machine.

Step 1. Installing Acronis Snap Deploy 4

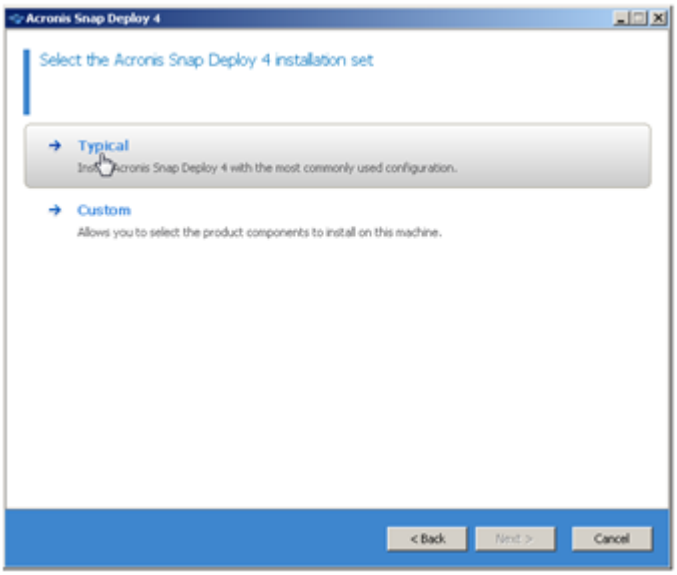
In this step, you will install Acronis Snap Deploy 4 in a typical configuration. For the complete description of installation methods and procedures, see the installation section (p. 39).

Before installation, make sure that:

- You have a machine running a modern version of Windows, such as Windows 7 Professional. For the list of operating systems where you can install Acronis Snap Deploy 4, see “Supported operating systems” (p. 39).
- You have the setup program. You can download the setup program from the Acronis product download Web page.
- You have one or more license keys for Acronis Snap Deploy 4. You can buy full license keys or obtain trial ones by going to the Acronis Snap Deploy 4 Web page. The type of license (“for Server” or “for Workstation”) determines the type of operating system that you can deploy.

On the machine where you want to install Acronis Snap Deploy 4, do the following:

1. Log on as an administrator and start the setup program.
2. Click **Install Acronis Snap Deploy 4**.
3. Accept the terms of the license agreement, and then click **Next**.
4. Click **Typical**.


Acronis Snap Deploy 4
Select the Acronis Snap Deploy 4 installation set
Typical
Custom
Allows you to select the product components to install on this machine.
< Back
Next >
Cancel

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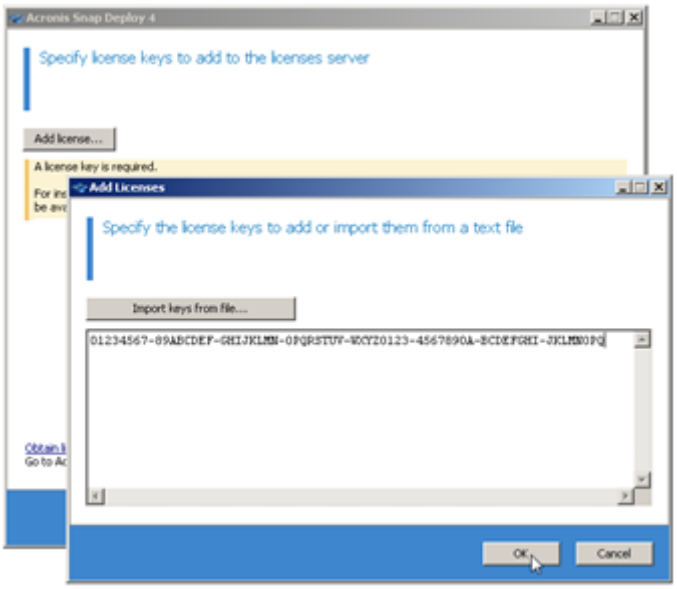
5. Click **Add license**, and then specify the license keys. You can type the license keys manually or import them from a text file.


Acronis Snap Deploy 4
Specify license keys to add to the licenses server
Add license...
A license key is required.
Add Licenses
Specify the license keys to add or import them from a text file
Import keys from file...
OK
Cancel

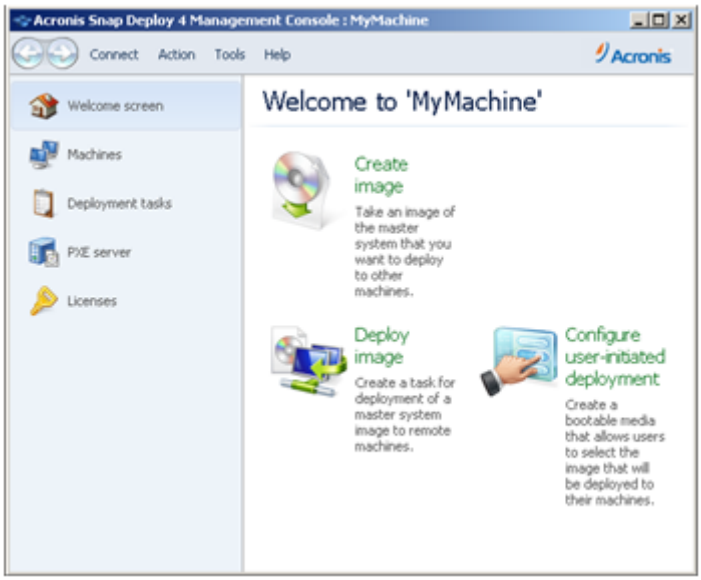
6. Specify whether the machine will participate in the Customer Experience Program (CEP).
7. Click **Install**.

Step 2. Starting Acronis Snap Deploy 4

On the machine where you installed Acronis Snap Deploy 4:

- On the desktop, click **Acronis Snap Deploy 4**.

When Acronis Snap Deploy 4 starts, the welcome screen appears.


Acronis Snap Deploy 4 Management Console : MyMachine
Connect
Action
Tools
Help
Acronis
Welcome screen
Machines
Deployment tasks
PXE server
Licenses
Welcome to 'MyMachine'
Create image
Take an image of the master system that you want to deploy to other machines.
Deploy image
Create a task for deployment of a master system image to remote machines.
Configure user-initiated deployment
Create a bootable media that allows users to select the image that will be deployed to their machines.

Step 3. Creating a bootable media

In this step, you will create a bootable media that enables creating master images and performing deployment.

On the machine where you installed and started Acronis Snap Deploy 4, do the following:

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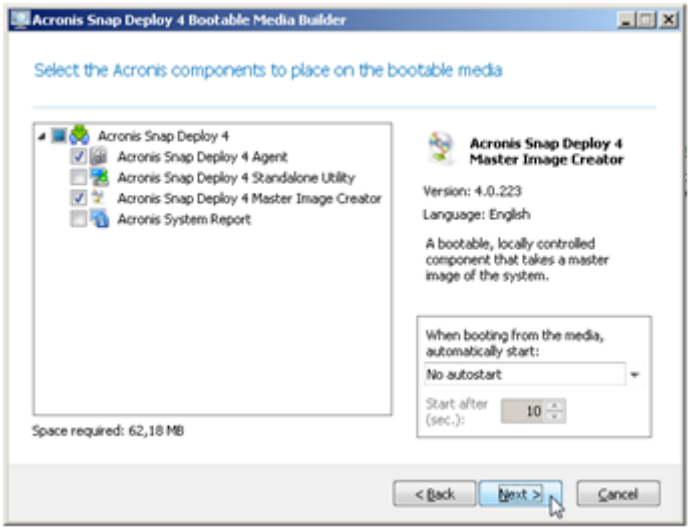
1. On the **Tools** menu, click **Create bootable media**.
2. In the list of components, select **Acronis Snap Deploy 4 Agent** and **Acronis Snap Deploy 4 Master Image Creator**.


Acronis Snap Deploy 4 Bootable Media Builder
Select the Acronis components to place on the bootable media
Acronis Snap Deploy 4
Acronis Snap Deploy 4 Agent
Acronis Snap Deploy 4 Standalone Utility
Acronis Snap Deploy 4 Master Image Creator
Acronis System Report
Space required: 62,18 MB
Acronis Snap Deploy 4 Master Image Creator
Version: 4.0.223
Language: English
A bootable, locally controlled component that takes a master image of the system.
When booting from the media, automatically start:
No autostart
Start after (sec.):
10
< Back
Next >
Cancel

3. In **Network settings**, in **Server name/IP**, specify the name of the machine where you installed Acronis Snap Deploy 4.
4. Choose to create the media on a CD or DVD. Insert a blank CD-R/RW or DVD-R/RW.

   Tip. If no CD-RW, DVD-RW, or a similar optical disc drive is present on the machine, you can choose to create an ISO file that you can later burn to an optical disc on another machine. You can also create the media on a USB drive. For details, see “Creating a bootable media” (p. 58).
5. Click **Create**.

Step 4. Creating a master image

In this step, you will create an image of a machine and save the image to a USB hard disk.

Choose a machine whose image you want to create. No license is required for imaging the machine. However, a server or a workstation license will be used for deploying the machine, depending on whether the machine is running a server operating system (such as Windows 2008 Server or Linux) or a workstation operating system (such as Windows 7). For the list of server and workstation operating systems, see “Supported operating systems for imaging and deployment” (p. 15).

On the machine whose image you want to create, do the following:

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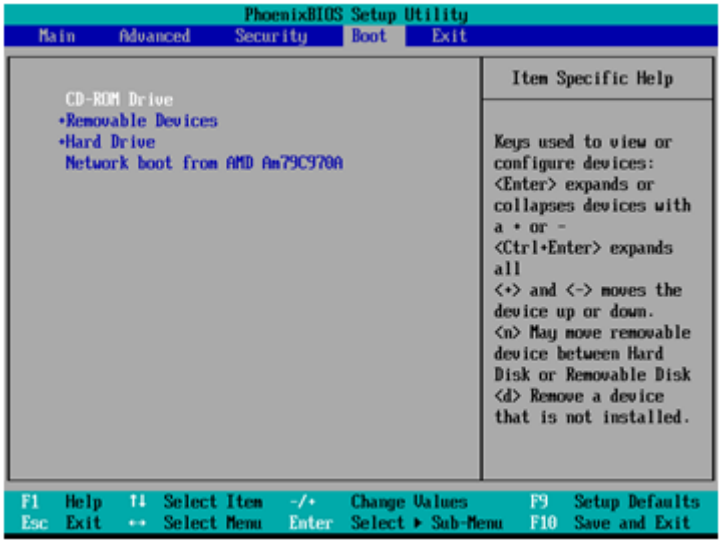
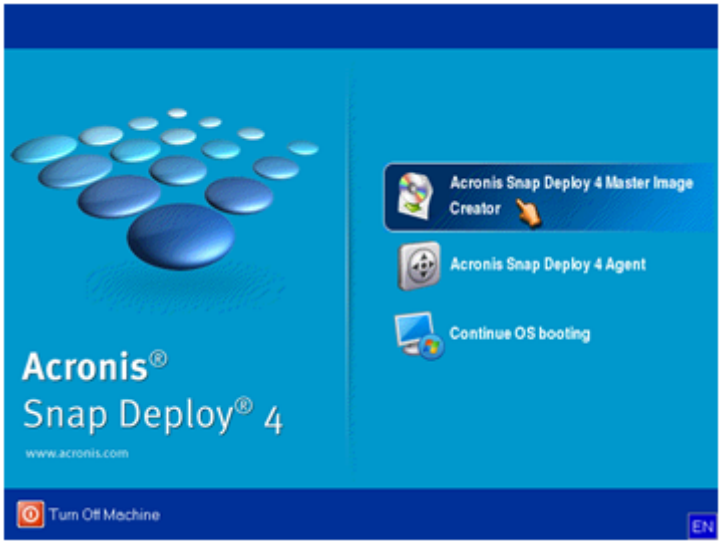
1. Make sure that the CD or DVD drive has a higher boot priority than the hard disk drive. You may need to open the BIOS setup utility of the machine and adjust the boot priority setting, similarly to what is shown in the following picture.


PhoenixBIOS Setup Utility
Main Advanced Security Boot Exit
CD-ROM Drive
•Removable Devices
•Hard Drive
Network boot from AMD Am79C970A
Item Specific Help
Keys used to view or configure devices:
<Enter> expands or collapses devices with a + or -
<Ctrl+Enter> expands all
<+> and <-> moves the device up or down.
<n> May move removable device between Hard Disk or Removable Disk
<d> Remove a device that is not installed.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

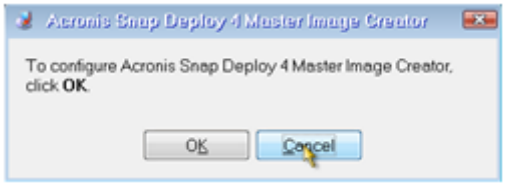
2. Attach the USB hard disk drive to the machine.

   Tip. Alternatively, you will be able to save the image to a network folder, as described later in this procedure.

3. Boot the machine from the bootable media you created.
4. On the boot menu, click **Acronis Snap Deploy 4 Master Image Creator**.



5. In the pop-up window, click **Cancel** or wait until that window closes.



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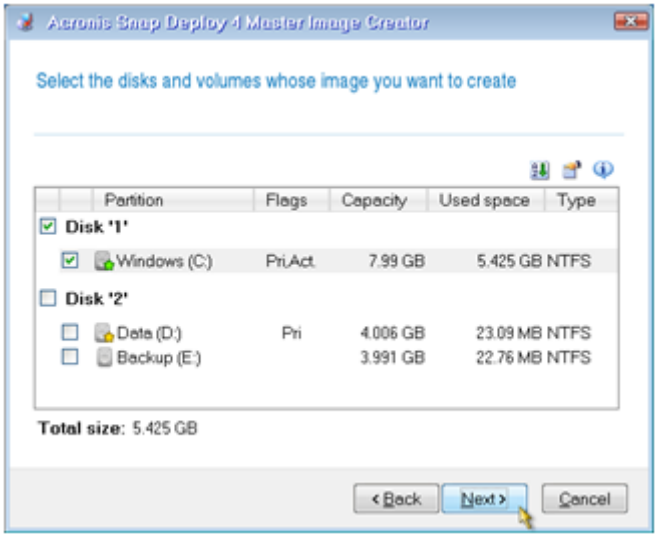
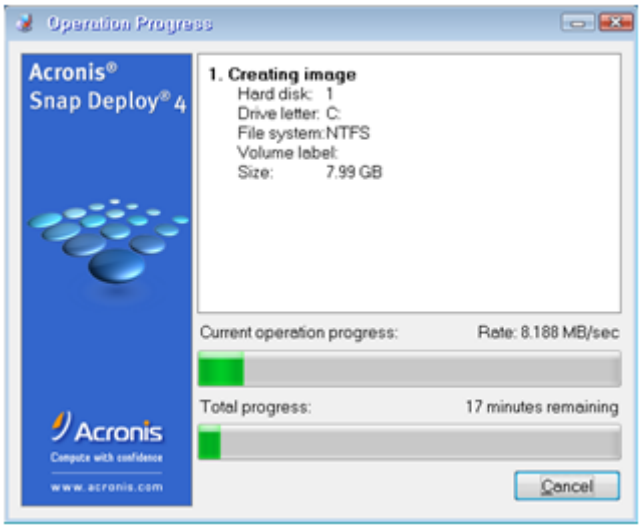
6. Select the volumes that you want to include in the master image. You can leave the default selection, which normally includes the volumes that contain the operating system.



7. Specify a folder on the USB hard disk where you want to save the image.
   Alternatively, specify a network folder, and the user name and password to access that folder.
8. Keep clicking **Next** until the summary screen appears. Click **Create** in that screen.

Acronis Snap Deploy 4 starts creating the image.



After the image is created, the machine will restart.

Step 5. Performing deployment

In this step, you will deploy the created master image to a single machine (the target machine).

***Tip:** For getting started, we recommend performing deployment **to the same machine** from which you created the image, or to **a machine with identical hardware.** This way, no extra steps, such as using the Universal Deploy option, are required.*

Preparing the target machine

On the target machine, do the following:

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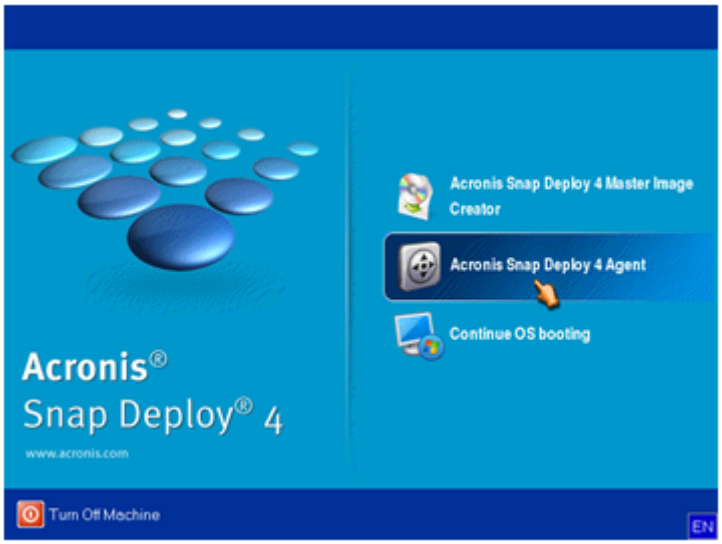
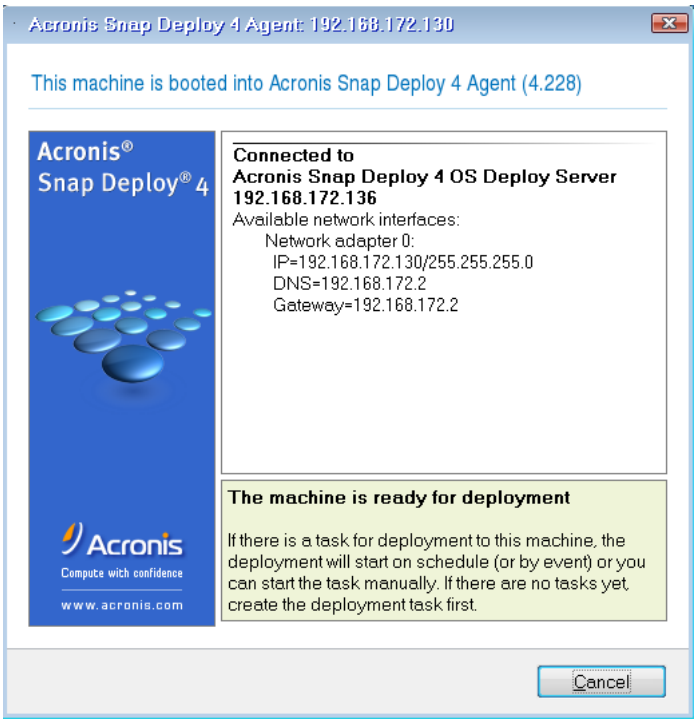
1. Make sure that the CD or DVD drive has a higher boot priority than the hard disk drive. You may need to open the BIOS setup utility of the machine and adjust the boot priority setting.
2. Boot the machine from the bootable media you created.
3. On the boot menu, click **Acronis Snap Deploy 4 Agent**.



4. In the pop-up window, click **Cancel** or wait until that window closes.
5. Make sure that the machine is ready for deployment. The window should look similar to the following picture.


Acronis Snap Deploy 4 Agent: 192.168.172.130
This machine is booted into Acronis Snap Deploy 4 Agent (4.228)
Acronis®
Snap Deploy® 4
Connected to
Acronis Snap Deploy 4 OS Deploy Server
192.168.172.136
Available network interfaces:
Network adapter 0:
IP=192.168.172.130/255.255.255.0
DNS=192.168.172.2
Gateway=192.168.172.2
The machine is ready for deployment
If there is a task for deployment to this machine, the deployment will start on schedule (or by event) or you can start the task manually. If there are no tasks yet, create the deployment task first.
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Compute with confidence
www.acronis.com
Cancel

Details. The target machine becomes ready for deployment when it connects to Acronis Snap Deploy 4 OS Deploy Server. This server is part of Acronis Snap Deploy 4. If the machine does not connect to the server, you may need to adjust network settings, as described in “Booting the target machines” (p. 107).

After the target machine is ready, you can deploy the master image to it.

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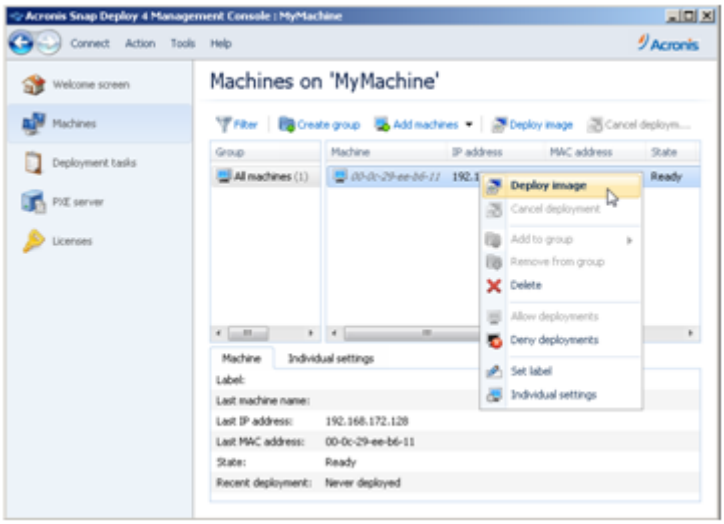
Deploying the master image

On the machine where you installed Acronis Snap Deploy 4, do the following:

1. Attach the USB hard disk drive with the master image to the machine. Optionally, copy the image to the local hard disk of the machine.
2. Click the **Machines** view. Make sure that the target machine you prepared is shown in the list and has the **Ready** state.



3. Right-click the target machine, and then click **Deploy image**.
4. Keep clicking **Next** until the template selection window appears. Click **Create new** in that window.
5. Click **Create a new template**, and then click **Next**.
6. Select the master image (the .tib file) that you created, and then click **Next**.
7. In the deployment settings window, click **Next**.

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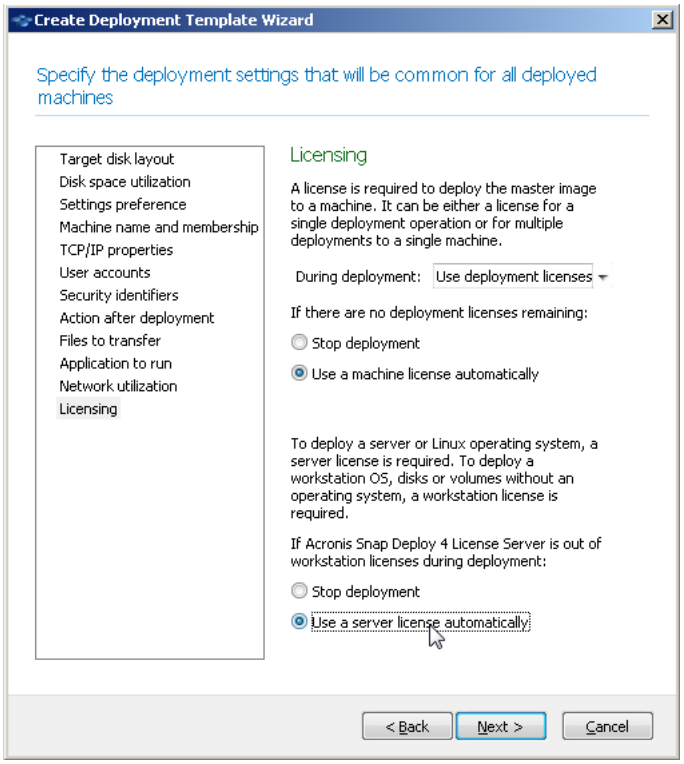
Note. If you imaged a machine running a workstation operating system (such as Windows 7) but you only have server licenses (such as Acronis Snap Deploy 4 for Server – Trial License), you may want to allow the software to use this type of license to deploy the machine. To do so, click **Licensing** in the deployment settings window, and then click **Use a server license automatically**.

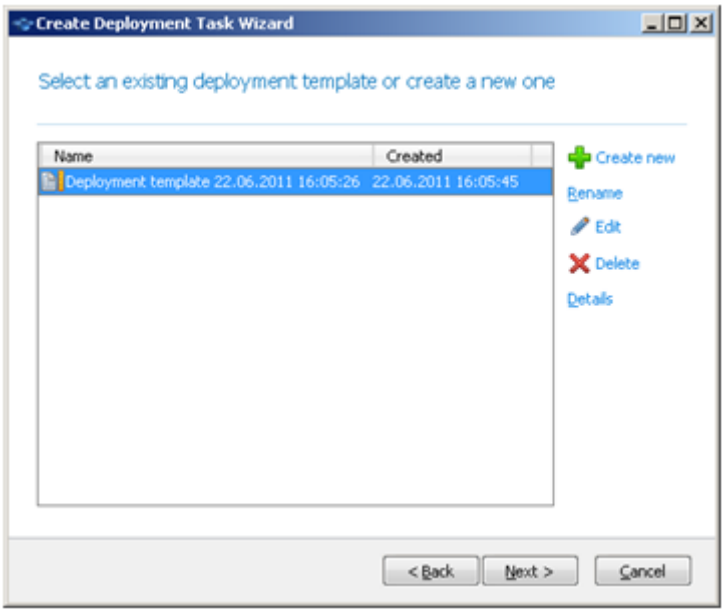

Create Deployment Template Wizard
Specify the deployment settings that will be common for all deployed machines
Target disk layout
Disk space utilization
Settings preference
Machine name and membership
TCP/IP properties
User accounts
Security identifiers
Action after deployment
Files to transfer
Application to run
Network utilization
Licensing
Licensing
A license is required to deploy the master image to a machine. It can be either a license for a single deployment operation or for multiple deployments to a single machine.
During deployment: Use deployment licenses
If there are no deployment licenses remaining:
Stop deployment
Use a machine license automatically
To deploy a server or Linux operating system, a server license is required. To deploy a workstation OS, disks or volumes without an operating system, a workstation license is required.
If Acronis Snap Deploy 4 License Server is out of workstation licenses during deployment:
Stop deployment
Use a server license automatically
< Back
Next >
Cancel

Alternatively, you can add a workstation license before starting the deployment, by opening the **Licenses** view and clicking **Add license** on the toolbar.

8. Keep clicking **Next** until the summary window appears. Click **Save** in that window.

   Details. You have created a deployment template. It determines how to perform deployment. You can reuse this template in other deployment tasks.

9. Select the deployment template you created, and then click **Next**.



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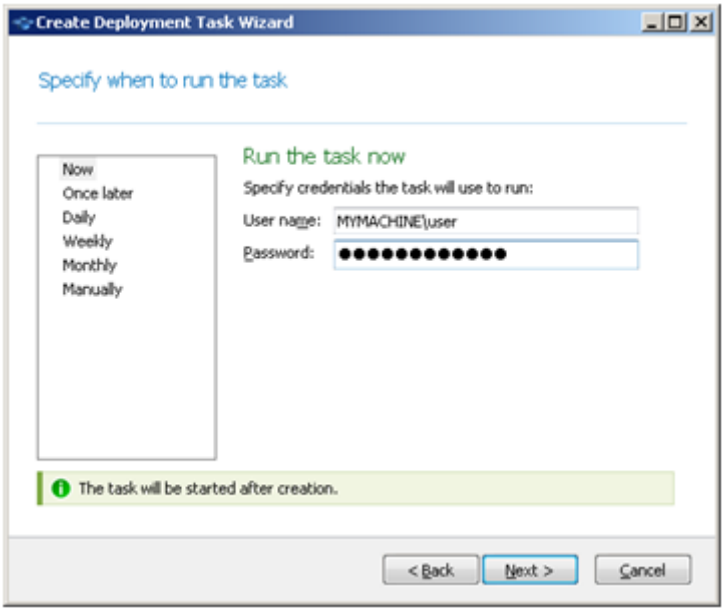
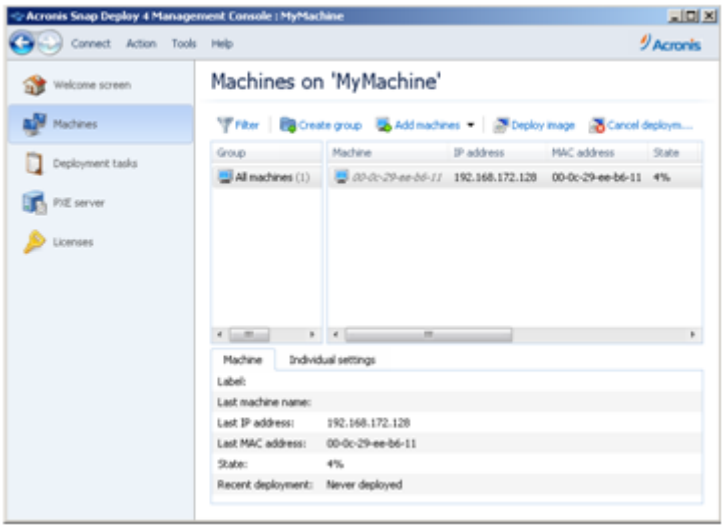
10. When asked about when to run the deployment, select **Now** and type the user name and password that you use to log on to Windows.



11. Keep clicking **Next** until the summary window appears. Click **Create** in that window.

You can view the progress of the deployment both on the machine where you installed Acronis Snap Deploy 4 and on the target machine.



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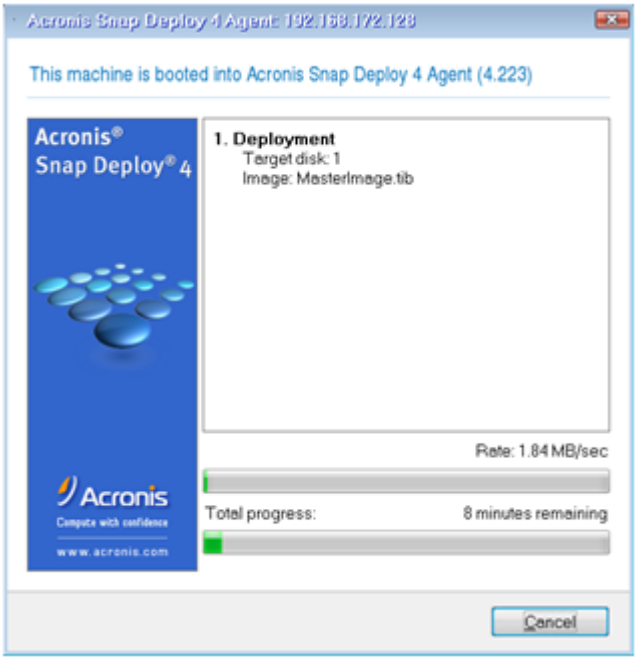
Viewing the deployment progress on the machine with Acronis Snap Deploy 4



Viewing the deployment progress on the target machine

What you can do next

In the navigation pane, you can open the corresponding views to navigate across the software.

- **To run the deployment again,** open the **Deployment tasks** view, select the task you created, and then click **Run** on the toolbar.

  For details about the **Deployment tasks** view, see “Managing deployment tasks” (p. 131).
- **To add more machines,** open the **Machines** view and then click **Add machines**. You can add machines by their physical addresses, known as MAC addresses.

  Another way to add a machine to this view is to boot the machine so that it becomes ready for deployment, as described in “Preparing the target machine” earlier in this section. You can then turn off or restart the machine without performing deployment. The machine remains in the view.

  For details about the **Machines** view, see “Managing the list of machines” (p. 126).
- **To add more licenses for deployment,** open the **Licenses** view and then click **Add license** on the toolbar. Clicking **Obtain license** opens the Acronis Snap Deploy 4 Purchasing Web page.

  For details about managing licenses, see “Using Acronis Snap Deploy 4 License Server” (p. 54). For information about license types, see “Licensing policy” (p. 16).
- **To set up network booting of machines** (instead of booting them from a media), open the **PXE server** view, click **Upload components to PXE**, and then follow the steps similar to those described in “Creating a bootable media” earlier in this section.

  For details about setting up the network booting, see “Configuring Acronis PXE Server” (p. 65).

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4 Installation of Acronis Snap Deploy 4

4.1 Supported operating systems

This section lists the operating systems where components of Acronis Snap Deploy 4 can be installed.

It does not matter which Service Pack (if any) is installed in the operating system.

Any components for Windows can be installed in the following operating systems:

- Windows Server 2008 R2
- Windows Server 2008 (x86, x64)
- Windows Server 2003 (x86, x64)
- Windows Server 2003 R2 (x86, x64)
- Windows Small Business Server 2011
- Windows Small Business Server 2003
- Windows Server 2003 x64 Edition
- Windows 8 (x86, x64)
- Windows 8 Pro (x86, x64)
- Windows 8 Enterprise (x86, x64)
- Windows 7 Professional (x86, x64)
- Windows 7 Ultimate (x86, x64)
- Windows Vista Business (x86, x64)
- Windows Vista Ultimate (x86, x64)
- Windows XP Professional
- Windows XP Professional x64 Edition

In addition to the above-listed operating systems, **Acronis Snap Deploy 4 Management Console** and **Acronis Snap Deploy 4 Management Agent** can be installed in any of the following operating systems:

- Windows 7 Home Basic, Windows 7 Home Premium
- Windows Vista Home Basic, Windows Vista Home Premium
- Windows XP Home

4.2 System requirements

Components for Windows

Component	Disk space required during installation or update	Disk space occupied by the component(s)	Additional
Complete installation	485 MB	271 MB	

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Management Console	386 MB	193 MB	CD-R/RW, DVD-R/RW, or BD-R/RE for creating bootable media 1024x768 screen resolution Mouse (required)
OS Deploy Server	54 MB	27 MB	
Management Agent	38 MB	19 MB	
PXE Server	30 MB	15 MB	
Wake-on-LAN Proxy	12 MB	6 MB	
License Server	24 MB	12 MB	

Minimum memory requirements for a component are the same as for the Windows operating system where it is installed.

Network interface card is a common requirement for all the components.

Bootable media

Media type	Memory	ISO image size
Based on Windows PE	512 MB	357 MB
Linux-based	256 MB	110 MB

4.3 Used ports and IP addresses

The Acronis Snap Deploy 4 OS Deploy Server and Acronis Snap Deploy 4 Management Console components use the following ports and IP addresses for remote operation:

- UDP port: 9876
- TCP port: 9876. If this port is busy, the deployment server and the management console choose a port at random
- IPv4 multicast address: 239.255.219.45
- Acronis Snap Deploy 4 Management Console UDP port: 9877. If this port is busy, the management console chooses a port at random

Acronis PXE Server uses the following ports and IP addresses:

- UDP port: 67, 68, 69
- Broadcast address: 255.255.255.255

For a remote installation (p. 47), the TCP port 25001 is used.

If you are using a firewall, you may need to set the appropriate access options.

4.4 Typical installation

With typical installation, all components of Acronis Snap Deploy 4 that are needed for deployment and offline imaging will be installed on the same machine.

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Acronis Snap Deploy 4 will be installed with the following functionality:

- Performing deployment through the network
- Booting of the target machines over the network
- Managing the deployments by using the management console
- Creating a bootable media for deployment
- Creating a bootable media for taking a master image
- Storing and managing licenses of Acronis Snap Deploy 4

The following components will be installed on the machine:

- Acronis Snap Deploy 4 OS Deploy Server (including the Acronis Universal Deploy (p. 26) add-on)
- Acronis Snap Deploy 4 License Server
- Acronis Snap Deploy 4 Management Console
- Acronis PXE Server

To install Acronis Snap Deploy 4 Management Agent or Acronis Wake-on-LAN Proxy, and for more flexible installation, use custom installation (p. 41).

To install Acronis Snap Deploy 4 (typical installation)

1. Log on as an administrator and start the setup program.
2. Click **Install Acronis Snap Deploy 4**.
3. Accept the terms of the license agreement, and then click **Next**.
4. Click **Typical**.
5. Click **Add license**, and then type the license keys for Acronis Snap Deploy 4 or import them from a file. You must provide at least one license key (either a machine license or a deployment license).

   Note: *The licenses will not be used until you start deployment.*

6. Specify whether the machine will participate in the Customer Experience Program (CEP).

   You will be able to change this setting at a later time by starting Acronis Snap Deploy 4 and clicking **Help -> Customer Experience Program (CEP)**.
7. Click **Install**.

4.5 Custom installation

With custom installation, you can select which components of Acronis Snap Deploy 4 to install. You can also specify additional parameters. For example, you can change the default folder for installation.

You may want to use custom installation in the following cases:

- Installing Acronis Snap Deploy 4 Management Agent to take a master image of a machine without restarting it (p. 24)
- Installing Acronis Wake-on-LAN Proxy to wake up machines that are located in another subnet
- Installing different components on different machines, such as installing Acronis Snap Deploy 4 OS Deploy Server on one machine and Acronis PXE Server on another. For examples, see “Common installation configurations” (p. 42).

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4.5.1 Installation procedure

Preparation

To be able to install Acronis Snap Deploy 4 OS Deploy Server, you need to have at least one machine license or deployment license on Acronis Snap Deploy 4 License Server. The license can be trial or full.

- If you are installing both Acronis Snap Deploy 4 License Server and Acronis Snap Deploy 4 OS Deploy Server on the same machine, you will be able to provide the license keys during installation.
- If Acronis Snap Deploy 4 License Server is installed on a different machine, load the license keys to that license server before installing the deployment server.

The license key just needs to be available on the license server. It will not become used until you start deployment.

Installation of other components does not require licenses.

To install Acronis Snap Deploy 4 (custom installation)

1. Log on as an administrator and start the setup program.
2. Click **Install Acronis Snap Deploy 4**.
3. Accept the terms of the license agreement, and then click **Next**.
4. Click **Custom**.
5. In the list of components, select the components that you want to install. For details about installing the components, see “Installation of components” (p. 44).
6. If you selected Acronis Snap Deploy 4 License Server for installation, provide the license keys of Acronis Snap Deploy 4.
7. If you selected Acronis Snap Deploy 4 OS Deploy Server without selecting Acronis Snap Deploy 4 License Server, specify the name or IP address of the machine where the license server is installed.
8. Specify the folder where the components will be installed.
9. If prompted, specify the following:
   - Whether to install the components for all users on the machine (recommended) or only for the current user
   - Whether the machine will participate in the Customer Experience Program (CEP). You will be able to change this setting at a later time by starting Acronis Snap Deploy 4 and clicking **Help -> Customer Experience Program (CEP)**.
10. Click **Install**.

4.5.2 Common installation configurations

Acronis Snap Deploy 4 components can be installed in various configurations, to distribute various components and features among the machines on the network.

a) The minimal configuration that enables only **offline imaging (p. 24) and stand-alone deployment (p. 9)** consists of:
   - Acronis Snap Deploy 4 Management Console

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b) The minimal configuration that enables **offline imaging, stand-alone deployment, and deployment through the network with Acronis Snap Deploy 4 OS Deploy Server** consists of the following components:

- Acronis Snap Deploy 4 Management Console
- Acronis Snap Deploy 4 License Server
- Acronis Snap Deploy 4 OS Deploy Server

On the target machines, no Acronis components are required.

c) The configuration that adds the **network boot of the target machines** to the functionality described in (b):

- Acronis Snap Deploy 4 Management Console
- Acronis Snap Deploy 4License Server
- Acronis Snap Deploy 4 OS Deploy Server
- Acronis PXE Server

The components can be installed all on the same machine, or on different machines. On the target machines, no Acronis components are required.

This is the recommended elementary configuration that enables most of the Acronis Snap Deploy 4 functionality. This is the configuration for typical installation (p. 40).

If physical access to the powerful server is limited, you can install the console on a separate machine. Another common configuration is:

Workstation:

- Acronis Snap Deploy 4 Management Console

Server:

- Acronis Snap Deploy 4 License Server
- Acronis Snap Deploy 4 OS Deploy Server
- Acronis PXE Server

Generally, you can install all Acronis servers on separate machines. In this case, you will have to connect the management console to each server separately to manage the server. With all servers on one machine, only one console connection is needed.

d) To add to any configuration (a)–(c) the **online imaging (p. 24) ability** and **the ability to validate images integrity**, install **Acronis Snap Deploy 4 Management Agent**.

Online imaging means that the master system is imaged live (without restarting the machine or suspending operations). You can perform online imaging remotely, by connecting the console to the management agent installed on the master machine. The management agent will be included in the master image and deployed to all target machines.

However, having excess software in the master image is not always rational.

We recommend that you create a master image by using the bootable component called Acronis Snap Deploy 4 Master Image Creator. Nevertheless, having at least one management agent on the network (not necessarily on the master machine) makes sense. You will be able to validate (check) the integrity of your images (p. 78) by using the management agent.

e) To add to Acronis Snap Deploy 4 OS Deploy Server an **ability to perform deployment in another subnet** (across a network switch) in configuration (b) or (c), install **Acronis Wake-on-LAN Proxy** on any server in the subnet where the target machines are. No additional actions are required.

Acronis Wake-on-LAN Proxy has to be installed only if:

- You are going to perform deployment to a specific list of machines.

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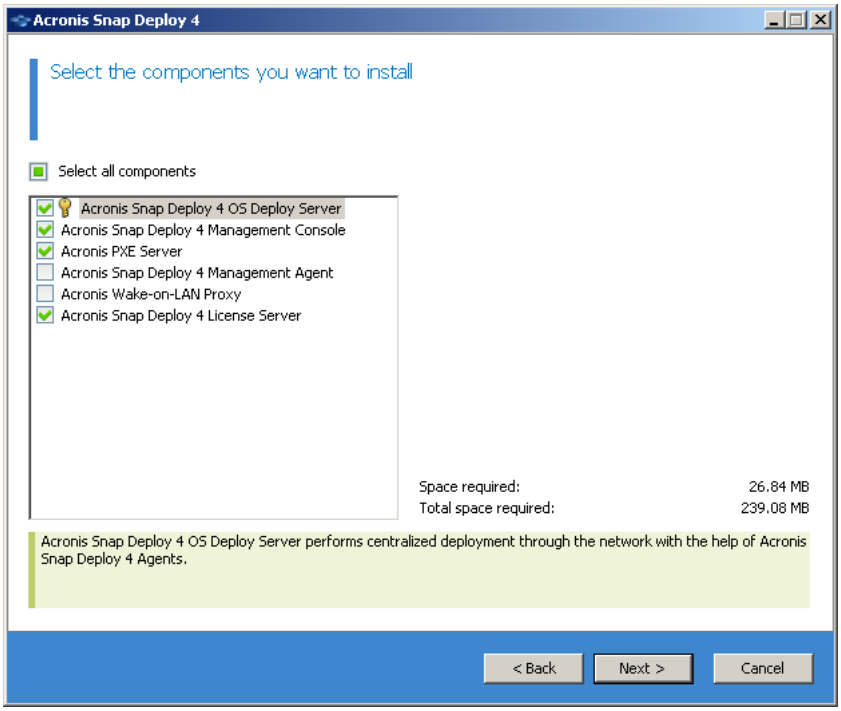
AND

- All or some of the target machines are in a subnet other than Acronis Snap Deploy 4 OS Deploy Server.

4.5.3 Installation of components

The setup program of Acronis Snap Deploy 4 includes the following components and component features:

- **OS Deploy Server**, which includes:
  - Acronis Snap Deploy 4 OS Deploy Server
  - Acronis Universal Deploy
- **License Server**, which includes:
  - Acronis Snap Deploy 4 License Server
  - The Acronis Snap Deploy 4 License Server Management Tool command-line utility
- **Management Console**, which includes:
  - Acronis Snap Deploy 4 Management Console
  - Media builders for creating an Acronis bootable media and a WinPE-based bootable media
- **PXE Server**
- **Management Agent**
- **Wake-on-LAN Proxy**


Acronis Snap Deploy 4
Select the components you want to install
Select all components
Acronis Snap Deploy 4 OS Deploy Server
Acronis Snap Deploy 4 Management Console
Acronis PXE Server
Acronis Snap Deploy 4 Management Agent
Acronis Wake-on-LAN Proxy
Acronis Snap Deploy 4 License Server
Space required: 26.84 MB
Total space required: 239.08 MB
Acronis Snap Deploy 4 OS Deploy Server performs centralized deployment through the network with the help of Acronis Snap Deploy 4 Agents.
< Back
Next >
Cancel

The list of components

4.5.3.1 Installation of Acronis Snap Deploy 4 Management Console

Acronis Snap Deploy 4 Management Console is an administrative tool for local and remote access to Acronis servers and Acronis Snap Deploy 4 Management Agent. Install Acronis Snap Deploy 4 Management Console on any machine from which you prefer to operate.

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Installation of Acronis Snap Deploy 4 Management Console also includes the media builders for creating an Acronis bootable media and a bootable media based on Windows Preinstallation Environment (WinPE).

Once Acronis Snap Deploy 4 Management Console is installed, you can install other components remotely (p. 47).

4.5.3.2 Installation of Acronis Snap Deploy 4 License Server

Acronis Snap Deploy 4 License Server is a component that tracks licenses of Acronis products. Install Acronis Snap Deploy 4 License Server on a machine accessible to Acronis Snap Deploy 4 OS Deploy Server. Consider installing both products on the same machine.

Installation of Acronis Snap Deploy 4 License Server also includes Acronis Snap Deploy 4 License Server Management Tool. This is a command-line utility for controlling the license server. Alternatively, you can control the license server by using Acronis Snap Deploy 4 Management Console.

Note: *If you have already installed a license server that came with another Acronis product, you will still need to install Acronis Snap Deploy 4 License Server. You can install both license servers on the same machine. The machine will then act as a common license server for all Acronis products.*

After installation, Acronis Snap Deploy 4 License Server launches automatically as a Windows service.

When installing Acronis Snap Deploy 4 License Server, you can add the license keys to it. You can add license keys at a later time, either by using the management console (p. 54) or in the command-line mode (p. 56).

4.5.3.3 Installation of Acronis Snap Deploy 4 OS Deploy Server

Acronis Snap Deploy 4 OS Deploy Server is a component that performs centralized deployment through the network with the help of bootable components called agents.

Before installing Acronis Snap Deploy 4 OS Deploy Server, you need to install Acronis Snap Deploy 4 License Server (p. 45) and import license keys to it. You can install both servers on the same machine.

If Acronis Snap Deploy 4 License Server is not installed on the machine where you are installing Acronis Snap Deploy 4 OS Deploy Server, the setup program will ask you to specify a license server. Browse to the server, or enter its name or IP address.

Note: *We recommend specifying the license server by its machine name. If you specify the license server by its IP address, Acronis Snap Deploy 4 OS Deploy Server will not be able to find the license server if this address changes.*

There is one exception to this recommendation: if your license server machine has non-English characters in its host name, you need to specify license server by IP address. Currently Unicode is not supported in Acronis Snap Deploy 4 communication between components, so Acronis Snap Deploy 4 OS Deploy Server will not be able to resolve the license server name properly if it contains non-English characters (i.e. if it contains Unicode symbols).

Installation of the deployment server does not decrease the number of licenses. The software just checks the availability of the licenses and stores the specified parameters of Acronis Snap Deploy 4 License Server to be able to access the license server at the time of deployment.

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Important: *If you are planning to use more than one deployment server, make sure that each particular machine is deployed only by one of them. Otherwise, each deployment server may use a separate license for the machine.*

4.5.3.4 Installation of Acronis PXE Server

Acronis PXE Server allows network booting of the target machines for performing deployment.

Using Acronis PXE Server considerably reduces the time required for booting the machines as compared to using bootable media. It also eliminates the need to have a technician onsite to install the bootable media into the system that must be booted. This allows for unattended scheduled deployment.

Using Acronis PXE Server makes sense if there is a Dynamic Host Control Protocol (DHCP) server in your network, so that the machines can automatically obtain IP addresses at boot. Without a DHCP server, you cannot boot machines from PXE.

We recommend that you have only one PXE server within a subnet to ensure predictability of the booting machines' behavior.

Acronis PXE Server starts running as a service immediately after installation. It will automatically launch at each system restart. You can stop and start this service in the same way as other services.

4.5.3.5 Installation of Acronis Wake-on-LAN Proxy

Acronis Wake-on-LAN Proxy enables Acronis Snap Deploy 4 OS Deploy Server to wake up the target machines located in another subnet.

You need to install Acronis Wake-on-LAN Proxy only if:

- You are going to perform deployment to specific machines (deployment to any ready machines does not involve waking up the machines by the deployment server)

AND

- All or some of the target machines are in a subnet other than Acronis Snap Deploy 4 OS Deploy Server.

Install Acronis Wake-on-LAN Proxy on any server in the same subnet as the target machines. No additional actions are required.

Acronis Wake-on-LAN Proxy runs as a service immediately after installation. Later on it will automatically launch at each system restart. You can stop and start this service in the same way as other services.

4.5.3.6 Installation of Acronis Snap Deploy 4 Management Agent

Installation of **Acronis Snap Deploy 4 Management Agent** adds the online imaging ability and the ability to validate integrity of the master images.

Online imaging means that the master system is imaged live (without restarting the machine or suspending operations). You can perform online imaging remotely by connecting the console to the management agent installed on the master machine. The management agent will be included in the master image and deployed on all target machines.

However, having excess software in the master image is not always rational.

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We recommend that you create a master image by using the bootable component called Acronis Snap Deploy 4 Master Image Creator. Nevertheless, having at least one management agent on the network (not necessarily on the master machine) makes sense. You will be able to validate (check) the integrity of your images (p. 78) by using the management agent.

4.5.3.7 Installation of Acronis Universal Deploy

Acronis Universal Deploy is an add-on to Acronis Snap Deploy 4. It is installed automatically when you install Acronis Snap Deploy 4 OS Deploy Server (p. 45).

Universal Deploy requires a separate license (p. 17).

Note: *You do not need a license to install Acronis Universal Deploy. However, do not forget to add the Acronis Universal Deploy licenses to the license server before starting deployment. If the licenses are not found during deployment, the Acronis Universal Deploy step will be skipped.*

4.6 Other ways of installation

4.6.1 Installing components remotely

By using Acronis Snap Deploy 4 Management Console, you can install the following components of Acronis Snap Deploy 4 remotely:

- Acronis Snap Deploy 4 Management Agent
- Acronis Wake-on-LAN Proxy
- Acronis PXE Server
- Acronis Snap Deploy 4 License Server
- Acronis Snap Deploy 4 OS Deploy Server

4.6.1.1 Preparation

Before proceeding with remote installation, prepare the remote machines as follows:

- **Simple file sharing.** For a successful installation on a remote machine running any version of Windows XP, the option **Control panel > Folder options > View > Use simple file sharing** must be *disabled* on that machine.
- **User Account Control.** For a successful installation on a remote machine running Windows Vista or later, User Account Control (UAC) must be *disabled*. To access this option, go to **Control panel > User Accounts > Change User Account Control Settings**.
- **File and Printer Sharing** must be *enabled* on the remote machine. To access this option:
  - On a machine running Windows XP with Service Pack 2 or Windows 2003 Server: go to **Control panel > Windows Firewall > Exceptions > File and Printer Sharing**.
  - On a machine running Windows Vista, Windows Server 2008, or Windows 7: go to **Control panel > Windows Firewall > Network and Sharing Center > Change advanced sharing settings**.
- **Ports.** Acronis Snap Deploy 4 uses TCP ports 445 and 25001 for remote installation. Make sure that these ports are added to exceptions in the firewall settings on the remote machines. TCP port 445 is added to exceptions automatically by Windows Firewall when you enable File and Printer Sharing.

  To add a port to exceptions:

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- In Windows XP, Windows 2003 Server, and Windows Vista: go to **Control panel > Windows Firewall > Exceptions > Add Port**
- In Windows 7: go to **Control panel > Windows Firewall > Advanced settings > Inbound Rules > New Rule > Port**

Tip: *If the remote machines are members of an Active Directory domain and use no firewall other than Windows Firewall, you can add TCP port 25001 to exceptions by using Group Policy. On a domain controller, create a Group Policy object, then go to* ***Administrative Templates > Network > Network Connections > Windows Firewall > Domain Profile > Windows Firewall: Define port exceptions*** *(or:* ***Define inbound port exceptions****), and then add the following port exception:*
25001:tcp:*:enabled:Acronis remote install

You can exclude both ports from exceptions after the remote installation is complete.

4.6.1.2 Installation procedure

To install a component of Acronis Snap Deploy 4 remotely

1. Start Acronis Snap Deploy 4 Management Console.
2. On the **Tools** menu, click **Install components remotely**.
3. Select the location from which the installation packages of the components will be taken.

   The selection **The registered components** corresponds to the default folder: **%ProgramFiles%\Common Files\Acronis\SnapDeploy\RemoteInstall**
4. Select the component that you want to install.
5. If you are installing Acronis Snap Deploy 4 OS Deploy Server, specify the name or IP address of the machine with Acronis Snap Deploy 4 License Server. That license server must contain at least one available license.
6. In **Machine**, specify the name or IP address of the machine where you want to install the component. To open the list of machines on your network, click **Browse**.
7. To allow restarting the remote machine if it is required for installation, select the **Restart the machine automatically when required** check box. If you clear this check box, you may need to restart the remote machine later for the component to start working.
8. In **User name** and **Password**, specify the user name and password of an administrator on the remote machine.
9. Click **Install**.

Updating a component

To update a component on a remote machine, perform the same procedure.

4.6.2 Extracting the components of Acronis Snap Deploy 4

When you install Acronis Snap Deploy 4 Management Console, all installation files (.msi files) of Acronis Snap Deploy 4 components are placed in the **%ProgramFiles%\Common Files\Acronis\SnapDeploy\RemoteInstall** folder. As a result, you will be able to install a component remotely (p. 47) by using the management console; or install, modify, or repair a component by using the `msiexec` program.

To extract one or more components

1. Run the Acronis Snap Deploy 4 setup program.
2. Click **Extract installation files**.
3. Select the check boxes for the components whose installation files you want to extract.

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4. Select a location for the installation files, and then click **Extract**.

4.7 Upgrading Acronis Snap Deploy 4

This section describes how to upgrade Acronis Snap Deploy 4.

4.7.1 Upgrading from a previous product version

Prerequisites

Before proceeding with the upgrade from a previous version of Acronis Snap Deploy, make sure that you have one or more license keys for Acronis Snap Deploy 4. These can be either standard license keys or upgrade license keys.

An upgrade license key enables you to continue using a license key for the previous version ("old" license key). The old license key cannot be reassigned to a different machine.

You need at least one license key for Acronis Snap Deploy 4 (no matter which type) to be able to upgrade Acronis OS Deploy Server. This license key will remain available.

To upgrade from Acronis Snap Deploy 3

Perform the following steps on each machine where any component of Acronis Snap Deploy 3 is installed. Start with the machine where Acronis License Server is installed.

1. Start the setup program of Acronis Snap Deploy 4.
2. Click **Install Acronis Snap Deploy 4**.
3. Click **Update**.
4. If you are upgrading Acronis License Server, provide the license keys for Acronis Snap Deploy 4. The license keys for Acronis Snap Deploy 3 remain stored on the license server.
5. If you are upgrading Acronis OS Deploy Server apart from Acronis License Server, specify the machine with the license server.
6. Review the installation summary, and then click **Install**.

Upgrading Acronis PXE Server removes all components of Acronis Snap Deploy 3 that are uploaded to the PXE server. To continue using the PXE server, you need to upload the new components by connecting to the PXE server and clicking **Upload components**. For details, see the "Configuring Acronis PXE Server" (p. 65) section of the built-in Help.

Upgrading from older versions

Components of versions of Acronis Snap Deploy earlier than 3 are incompatible with Acronis Snap Deploy 4. To perform the upgrade:

1. Prepare a list of license keys that includes the license keys for the older version, and standard or upgrade license keys for Acronis Snap Deploy 4.
2. Uninstall all components of the older version.
3. Install Acronis Snap Deploy 4. For example, you can perform a typical installation (p. 40). When prompted, specify all license keys from your list.

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4.7.2 Upgrading from the trial to full product version

To upgrade from the trial to a full version of the software, buy the full licenses and import the license keys to Acronis Snap Deploy 4 License Server.

To upgrade to the full product version

1. Start Acronis Snap Deploy 4 Management Console.
2. Click **Licenses**. If prompted, specify the machine where the license server is installed.
3. Click **Add license**, and then provide the full license keys.

Acronis Snap Deploy 4 will start using the full licenses as soon as the trial ones expire.

4.8 Uninstalling Acronis Snap Deploy 4

To uninstall Acronis Snap Deploy 4, you should use the setup program.

To uninstall some or all components of Acronis Snap Deploy 4

1. Start the setup program of Acronis Snap Deploy 4.
2. Click **Install Acronis Snap Deploy 4**.
3. Do one of the following:
   - To uninstall all components, click **Remove**.
   - To uninstall individual components, click **Modify**, and then clear the check boxes for the components that you want to uninstall.
4. Proceed with the uninstallation.

Data remaining after uninstallation

Uninstalling Acronis Snap Deploy 4 License Server does not delete license keys. If you later reinstall the license server, all license keys automatically appear on the new license server. Used licenses remain used.

Uninstalling Acronis Snap Deploy 4 OS Deploy Server does not delete the deployment tasks, deployment templates, the list of machines, and individual deployment settings. If you later reinstall the deployment server, this data will be available to the new deployment server.

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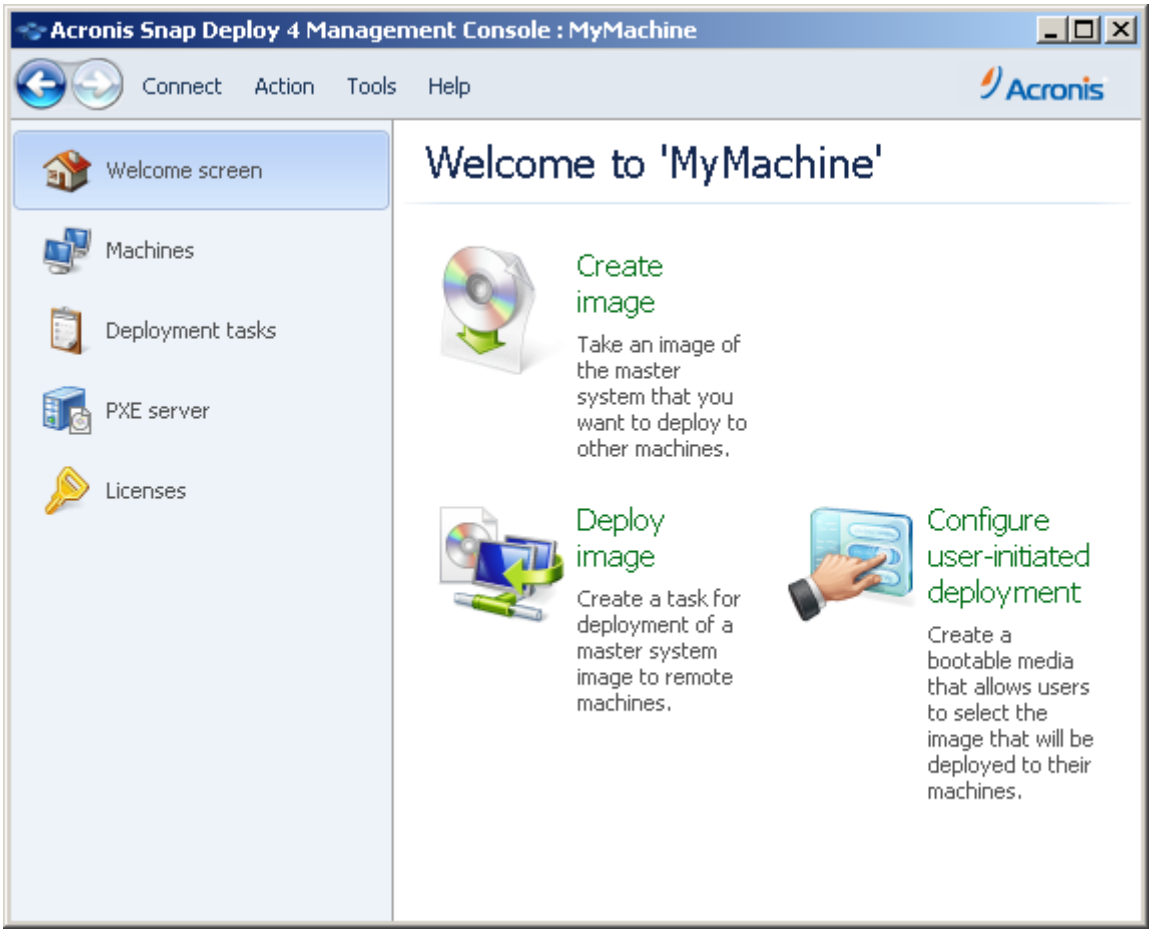
5 Using Acronis Snap Deploy 4 Management Console

5.1 Connecting to a machine

5.1.1 Connect to a local machine

When started, Acronis Snap Deploy 4 Management Console connects to the local machine if there is a manageable component of Acronis Snap Deploy 4 (such as Acronis Snap Deploy 4 OS Deploy Server) on this machine. You can manage any Acronis server or Acronis Snap Deploy 4 Management Agent installed on the same machine without any additional actions.


Acronis Snap Deploy 4 Management Console : MyMachine
Connect
Action
Tools
Help
Acronis
Welcome screen
Machines
Deployment tasks
PXE server
Licenses
Welcome to 'MyMachine'
Create image
Take an image of the master system that you want to deploy to other machines.
Deploy image
Create a task for deployment of a master system image to remote machines.
Configure user-initiated deployment
Create a bootable media that allows users to select the image that will be deployed to their machines.

The welcome screen of the management console

5.1.2 Connect to another machine

Acronis Snap Deploy 4 Management Console can connect over the network to a machine where one or more of the following components are installed:

- Acronis Snap Deploy 4 OS Deploy Server
- Acronis Snap Deploy 4 License Server

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- Acronis PXE Server
- Acronis Snap Deploy 4 Management Agent

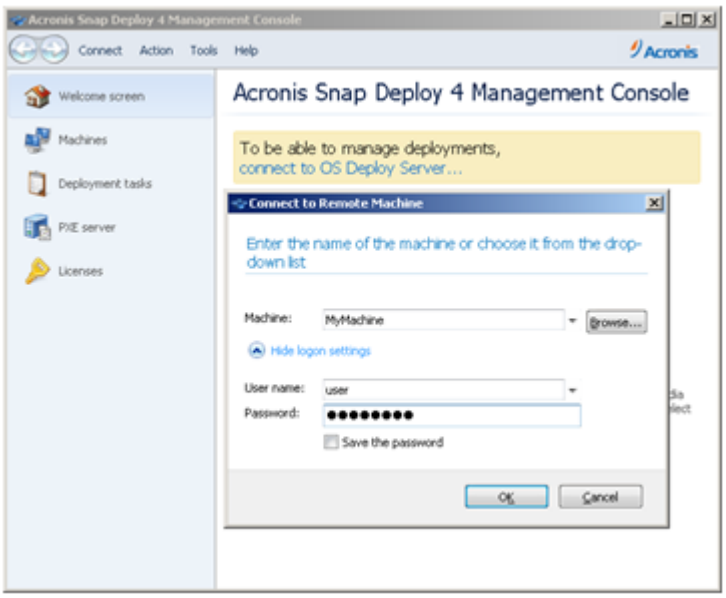
Once connected, you can manage the Acronis server or perform operations by using Acronis Snap Deploy 4 Management Agent.

To connect to an Acronis component, you need the administrator's privileges on the remote machine.

To connect to a component

1. On the **Connect** menu, click **Connect**.
2. In **Machine**, specify the name or IP address of the machine where the component is installed. To open the list of machines on your network, click **Browse**.
3. In **User name** and **Password**, specify the user name and password of an administrator on that machine.
4. To save the password for the user name, select the **Save password** check box.

Alternatively, you can connect to the corresponding component when you open the **Machines**, **Deployment tasks**, **PXE server**, or **Licenses** view. In the welcome screen, you will be asked to connect to Acronis Snap Deploy 4 OS Deploy Server if this component is not installed on the local machine.



Connecting to a component on a remote machine

Connection to a component is needed to perform the following operations:

- *Managing deployment (p. 79):* connect to Acronis Snap Deploy 4 OS Deploy Server.
- *Creating a master image of a machine without restarting it (p. 68):* connect to Acronis Snap Deploy 4 Management Agent.
- *Validating a master image (p. 78):* connect to Acronis Snap Deploy 4 Management Agent.
- *Managing licenses (p. 54):* connect to Acronis Snap Deploy 4 License Server.
- *Configuring Acronis PXE Server (p. 65):* connect to Acronis PXE Server.

No connection is needed to perform the following operations:

- *Creating an Acronis bootable media (p. 59) or a WinPE-based bootable media* (p. 62)

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- *Installing Acronis components remotely* (p. 47)

5.2 Browsing logs

Acronis Snap Deploy 4 OS Deploy Server and Acronis PXE Server store the log of the operations they have performed.

The view the log of Acronis Snap Deploy 4 OS Deploy Server

1. Connect the management console to the machine with Acronis Snap Deploy 4 OS Deploy Server.
2. Do either of the following:
   - In the left pane, click **Deployment tasks**, and then click **Log** on the toolbar.
   - On the **Help** menu, click **View log**.
3. In the left pane, select a log. In the right pane, examine the events recorded in the log.

The left pane shows up to 50 log entries. If there are more log entries, you can browse the list by using the buttons with the left and right arrows.

To delete a log entry, select it and click the **Delete the selected log entry** button.

If any step was terminated by an error, the corresponding log entry will be marked by a red circle with a white "X" inside.

The right window shows the list of events contained in the selected log entry. The three buttons to the right control message filters: the white "X" in the red circle filters error messages, the exclamation sign in a yellow triangle filters warnings, and the "i" in a circle filters information messages.

To select columns to display (such as the date and time of an event), right-click the table header, and then select the columns.

To sort the events by a particular column, click the desired column name. To reverse the sort order, click the column again.

You can also change column width by dragging the borders.

To view the log of Acronis PXE Server

1. Connect the management console to the machine with Acronis PXE Server.
2. In the left pane, click **PXE server**.
3. Examine the log entries in the lower part of the view.

5.3 Checking for software updates

Each time you start the management console, Acronis Snap Deploy 4 checks whether a new version of the software is available on the Acronis Web site. If so, the software provides a link for downloading the setup program of the new version.

To check for updates manually, start the management console and then click **Help -> Check for update**. In that window, you also can disable the automatic checks for updates.

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6 Using Acronis Snap Deploy 4 License Server

This section contains general information necessary for understanding Acronis Snap Deploy 4 License Server and covers operations with licenses.

6.1 Understanding Acronis Snap Deploy 4 License Server

Acronis Snap Deploy 4 License Server is a mechanism that tracks licenses of Acronis products. Acronis Snap Deploy 4 licensing is based on the number of machines (servers or workstations) that you deploy. For example, to deploy a system to 100 machines, you need 100 licenses.

Acronis Universal Deploy (p. 26) is an add-on to Acronis Snap Deploy 4 and has its own license key.

Acronis Snap Deploy 4 License Server tracks the licenses using a MAC address, which is unique for each network interface card (NIC). Although a MAC address is usually hardwired to the NIC, some operating systems offer a way to change it. It is important to note that attempting to change the MAC address on a system may impede the Acronis Snap Deploy 4 License Server operation and prevent you from other deployments to the same machine.

When installing Acronis Snap Deploy 4 OS Deploy Server, you need to specify a license server. After the license server is found, the software checks for available licenses on the server and stores its network address to be able to access the license server later, when deployment is launched.

When starting a deployment, Acronis Snap Deploy 4 OS Deploy Server checks for available licenses on the license server. If an appropriate license is available for a machine, the deployment operation will run on the machine. The number of available licenses will decrease by the number of systems being deployed.

If deployment under a deployment license has failed, that license becomes available again. A machine license remains used by the machine regardless of the result of deployment.

Acronis Snap Deploy 4 License Server can import multiple license keys from .txt or .eml files, saving you from the time-consuming procedure of typing each number.

When upgraded, recovered or reinstalled, the license server keeps all the imported licenses intact. However, it is recommended that you copy the files with license keys to removable media, or create a hard copy of those files and keep it in a safe place. This ensures that you have license data available in case of hardware failure.

6.2 Adding licenses by using Acronis Snap Deploy 4 Management Console

You can add the licenses when you are installing Acronis Snap Deploy 4 License Server. After the license server is installed, you can add licenses by using Acronis Snap Deploy 4 Management Console, as follows.

To add one or more license keys to the license server

1. Run Acronis Snap Deploy 4 Management Console.
2. Click **Licenses**. If the license server is installed on a different machine, click **Connect to Acronis Snap Deploy 4 License Server**, and then type the name or IP address of that machine.

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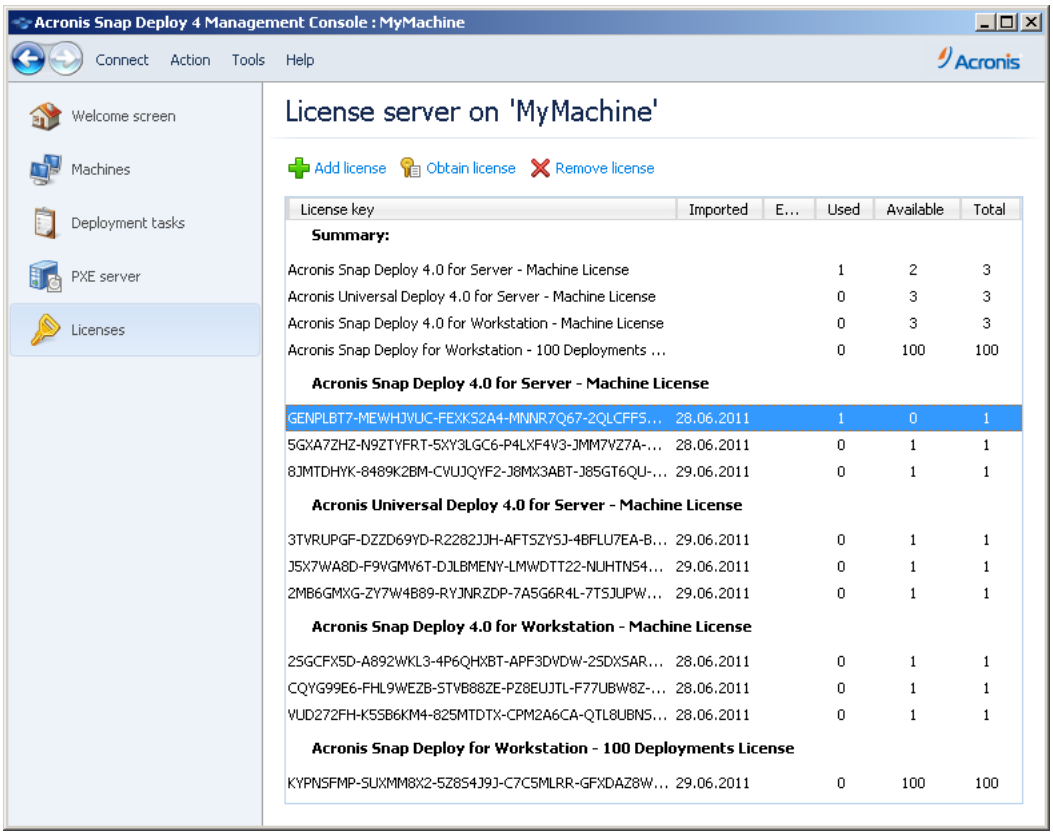
3. Click **Add License**.
4. In the **Add Licenses** window, type the license key or the path to a .txt or .eml file containing the license keys; or, you can browse to the file.
5. Click **Add**. Acronis Snap Deploy 4 License Server performs the operation and reports the number of newly-added licenses.


Acronis Snap Deploy 4 Management Console : MyMachine
Connect
Action
Tools
Help
Acronis
Welcome screen
Machines
Deployment tasks
PXE server
Licenses
License server on 'MyMachine'
Add license
Obtain license
Remove license
License key
Imported
E...
Used
Available
Total
Summary:
Acronis Snap Deploy 4.0 for Server - Machine License 1 2 3
Acronis Universal Deploy 4.0 for Server - Machine License 0 3 3
Acronis Snap Deploy 4.0 for Workstation - Machine License 0 3 3
Acronis Snap Deploy for Workstation - 100 Deployments ... 0 100 100
Acronis Snap Deploy 4.0 for Server - Machine License
GENPLBT7-MEWHJVUC-FEXKS2A4-MNNR7Q67-2QLCFFS... 28.06.2011 1 0 1
5GXA7ZHZ-N9ZTYFRT-5XY3LGC6-P4LXF4V3-JMM7VZ7A-... 28.06.2011 0 1 1
8JMTDHYK-8489K2BM-CVUJQYF2-J8MX3ABT-J85GT6QU-... 29.06.2011 0 1 1
Acronis Universal Deploy 4.0 for Server - Machine License
3TVRUPGF-DZZD69YD-R2282JJH-AFTSZYSJ-4BFLU7EA-B... 29.06.2011 0 1 1
J5X7WA8D-F9VGMW6T-DJLBMENY-LMWDTT22-NUHTNS4... 29.06.2011 0 1 1
2MB6GMXG-ZY7W4B89-RYJNRZDP-7A5G6R4L-7TSJUPW... 29.06.2011 0 1 1
Acronis Snap Deploy 4.0 for Workstation - Machine License
2SGCFX5D-A892WKL3-4P6QHXBT-APF3DVDW-2SDXSAR... 28.06.2011 0 1 1
CQYG99E6-FHL9WEZB-STVB88ZE-PZ8EUJTL-F77UBW8Z-... 28.06.2011 0 1 1
VUD272FH-K55B6KM4-825MTDTX-CPM2A6CA-QTL8UBNS... 28.06.2011 0 1 1
Acronis Snap Deploy for Workstation - 100 Deployments License
KYPNSFMP-SUXMM8X2-5Z8S4J9J-C7C5MLRR-GFXDAZ8W... 29.06.2011 0 100 100

The license server has 10 license keys of various types. The license corresponding to the highlighted license key has already been used for deployment. The bottom license key corresponds to 100 deployment licenses.

6.3 Viewing information about licenses

To view information about licenses

1. Run Acronis Snap Deploy 4 Management Console.
2. Click **Licenses**. If the license server is installed on a different machine, click **Connect to Acronis Snap Deploy 4 License Server**, and then type the name or IP address of that machine.

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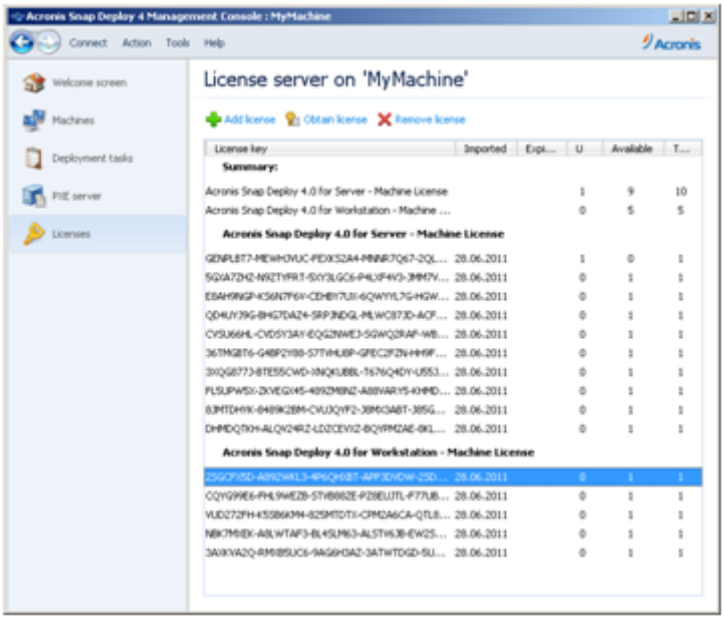
This will display all license keys available on Acronis Snap Deploy 4 License Server. One license key can correspond to multiple licenses.



The license server contains 10 server licenses and five workstation licenses

3. Right-click the column headings bar to choose the details to display: license key, import date, expiration date (for trial licenses), the total number of licenses assigned to each license key, how many of them are available (that is, free), and how many are used. For example, if one license corresponds to one license key, Total=1, Available=1, Used=0 (if the license is free) or Available=0, Used=1 (if the license has been allocated).

6.4 Removing licenses

To completely remove a license from Acronis Snap Deploy 4 License Server, select the corresponding license key from the list, and then click **Remove license** on the toolbar.

The following licenses cannot be removed:

- Used licenses
- Trial licenses

When a trial license expires, Acronis Snap Deploy 4 will use an available full license of the corresponding type.

6.5 Adding licenses in the command-line mode

As an alternative to the graphical user interface, you can add licenses in the command-line mode, by using Acronis Snap Deploy 4 License Server Management Tool.

To add licenses in the command-line mode

1. Run **cmd.exe** to open the Command Prompt window.
2. Go to the folder where Acronis Snap Deploy 4 License Server is installed. By default, the folder name is: **%Program Files%\Acronis\SnapDeploy\LicenseServerConsole**
3. Run the following command:

```
LicenseServerCmdLine --import-file <server name> <file name>
```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In this command:

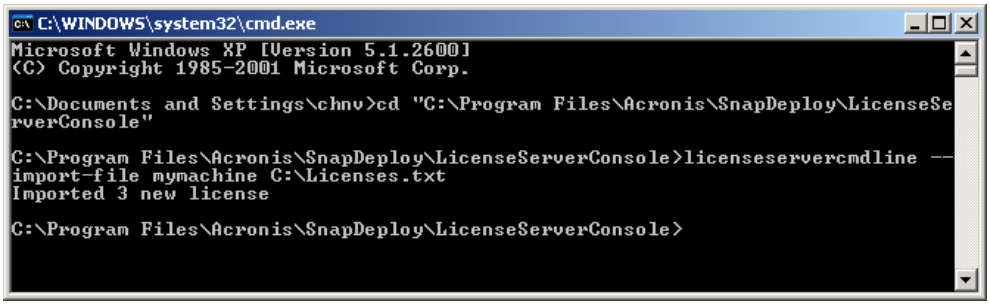
- `<server name>` is the name of the machine where Acronis Snap Deploy 4 License Server is installed.
- `<file name>` is the name of the .txt or .eml file with the license keys.

For the complete syntax of Acronis Snap Deploy 4 License Server Management Tool, see "Using Acronis Snap Deploy 4 License Server Management Tool" (p. 57).

Example

The following command adds the license keys from the file **C:\Licenses.txt** to the license server **mymachine**:

```
licenseservercmdline --import-file mymachine c:\Licenses.txt
```



6.6 Using Acronis Snap Deploy 4 License Server Management Tool

Acronis Snap Deploy 4 License Server Management Tool is a command-line utility for controlling Acronis Snap Deploy 4 License Server. The tool is the `LicenseServerCmdLine.exe` file located in the installation folder. By default, the folder name is %ProgramFiles%\Acronis\SnapDeploy\LicenseServerConsole.

The management tool uses the following syntax:

`LicenseServerCmdLine <command> <option1> <option2>` …

The management tool supports the following commands and parameters:

`--list`

Displays the list of license servers found on the local network.

`--status <server name or IP address>`

Displays the status of the specified license server, which is the number of total and available licenses for each Acronis product.

`--import <server name> <license key>`

Adds a new license key. You can specify multiple license keys by separating them with a space.

`--import-file <server name> <file name>`

Imports license keys from a .txt or an .eml file.

`--help`

Shows usage information.

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7 Deployment tools

Before deployment, each target machine must boot into a dedicated bootable component of Acronis Snap Deploy 4. An example of such component is Acronis Snap Deploy 4 Agent.

The machine can boot into the component in either of these ways:

- From a physical media (such as a DVD or a USB drive) that contains the component. Such media is called a bootable media.
- Over the network, by using Acronis PXE Server with the component uploaded to it.

This section describes how to create a bootable media or configure the PXE server.

7.1 Bootable components

Acronis Snap Deploy 4 has a number of bootable components that can perform operations on any PC-compatible hardware, including bare metal and machines with unsupported file systems.

- **Acronis Snap Deploy 4 Agent** boots on a target machine to enable deployment performed by Acronis Snap Deploy 4 OS Deploy Server (p. 99).
- **Acronis Snap Deploy 4 Master Image Creator** boots on a master machine and creates an image of the system (p. 68).
- **Acronis Snap Deploy 4 Standalone Utility** boots on a target machine and performs deployment on its own (p. 112).
- **Acronis Snap Deploy 4 Command-Line Utility** provides a command-line interface (p. 133) for performing imaging and deployment, and for sending e-mail notifications about deployment.
- **Acronis System Report** boots on a machine, collects information about the machine, and saves this information to a removable USB drive (such as a USB flash drive). For details, see “Collecting system information” (p. 145).

7.2 Creating a bootable media

You can create two types of bootable media:

- **Acronis bootable media** (recommended in most cases) is based on a Linux kernel and contains bootable components of Acronis Snap Deploy 4. To create this type of media, use the **Acronis Snap Deploy 4 Bootable Media Builder** wizard (p. 59).
- **WinPE-based bootable media** is based on Windows Preinstallation Environment (WinPE) and contains bootable components of Acronis Snap Deploy 4. To create this type of media, use the **Acronis Snap Deploy 4 PE Builder** wizard (p. 62).

Both types of media provide similar graphical user interface but differ in the set of bootable components they contain. Generally, you can use an Acronis media. You may want to use a WinPE-based media if the machine’s hardware, such as network adapters, is not properly recognized from the Acronis media, or if you need to use the command-line interface.

You can create a bootable media on a physical media, such as a DVD or a USB drive. Acronis PXE Server with uploaded bootable components can also be thought of as a kind of bootable media. That is why you can create a bootable media or upload bootable components to the PXE server by using the same wizards. Alternatively, you can configure the PXE server directly (p. 65).

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7.2.1 Creating an Acronis bootable media

Acronis bootable media is a physical media (CD, DVD, USB flash drive, or other media supported by the machine's BIOS as a boot device) that contains bootable components of Acronis Snap Deploy 4.

Acronis Snap Deploy 4 bootable media supports both BIOS and UEFI architecture.

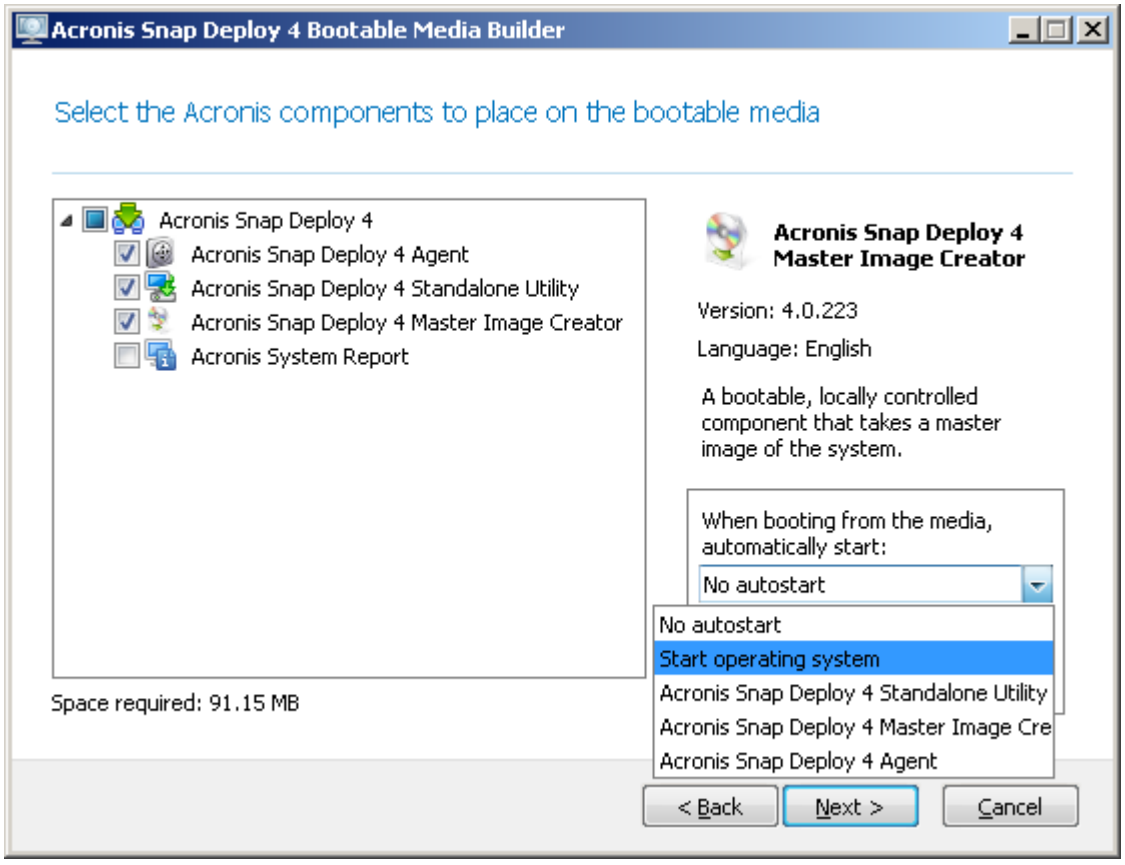
You can create an Acronis bootable media containing one or more of the following bootable components (p. 58):

- **Acronis Snap Deploy 4 Agent**
- **Acronis Snap Deploy 4 Master Image Creator**
- **Acronis Snap Deploy 4 Standalone Utility**
- **Acronis System Report**

To create a bootable media

1. Start the management console.
2. On the **Tools** menu, click **Create bootable media**.
3. Select the bootable components that will be placed on the media.

   For example, if you select Acronis Snap Deploy 4 Agent and Acronis Snap Deploy 4 Master Image Creator, you will be able to use such bootable media to perform deployment by using Acronis Snap Deploy 4 OS Deploy Server, and to create a master image.


Acronis Snap Deploy 4 Bootable Media Builder
Select the Acronis components to place on the bootable media
Acronis Snap Deploy 4
Acronis Snap Deploy 4 Agent
Acronis Snap Deploy 4 Standalone Utility
Acronis Snap Deploy 4 Master Image Creator
Acronis System Report
Space required: 91.15 MB
Acronis Snap Deploy 4 Master Image Creator
Version: 4.0.223
Language: English
A bootable, locally controlled component that takes a master image of the system.
When booting from the media, automatically start:
No autostart
No autostart
Start operating system
Acronis Snap Deploy 4 Standalone Utility
Acronis Snap Deploy 4 Master Image Cre
Acronis Snap Deploy 4 Agent
< Back
Next >
Cancel

Selecting bootable components

4. Under **When booting from the media, automatically start**, select the component that will start automatically after a time-out you specify. Such component is also referred to as the default boot menu item. The possible choices are the following:

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- One of the components on the media: The component will start after the time-out.
- **No autostart**: The Acronis loader will display the boot menu and wait for someone to select whether to boot the operating system or one of the Acronis components.
- **Start operating system**: The operating system, if present on the booting machine's hard disk, will start after the time-out. This option is designed to make the target machine boot into the deployed operating system after deployment. The main usage scenario is as follows.

  You use this wizard to configure the PXE server for deployment on a schedule (p. 100). You set up Acronis Snap Deploy 4 Agent to start automatically. After the deployment is completed, the target machine reboots into the agent again and might be deployed by another deployment operation. How to avoid this situation?

  To ensure that the target machine boots into the deployed operating system *after the deployment*, choose the **Start operating system** option in this step of the wizard. To ensure that the target machine boots into the agent *before the deployment*, tune the PXE server to work with your deployment server when setting up the deployment (p. 102).

Note: When booting from media, automatically start *option does not apply when Acronis bootable media loads in the UEFI mode.*

5. Under **Start automatically after**, specify the time-out interval in seconds. For example, if you choose to automatically start Acronis Snap Deploy 4 Agent, and set this parameter to **10**, the agent will launch 10 seconds after the boot menu is displayed.
6. If you are placing Acronis Snap Deploy 4 Agent on the media, specify whether the agent will connect to a particular Acronis Snap Deploy 4 OS Deploy Server. This setting allows you to have multiple deployment servers that perform different functions on the same network.

   To specify a deployment server, type its name or IP address in **Server name/IP**.

Note: *Acronis bootable media uses NetBIOS networking protocol to resolve Acronis Snap Deploy 4 OS Deploy Server in a network. NetBIOS protocol uses ANSI characters for host names. So, machines that have non-English characters in their names cannot be accessed from Acronis bootable media. If the name of the Acronis Snap Deploy 4 OS Deploy Server machine contains non-English characters, use the machine's IP-address to specify it in the network.*

The deployment server (along with the network settings for the agent) can also be specified onsite (on the target machine's side) when booting the agent. To be able to configure the agent onsite, set up a reasonable delay before the default network settings will be applied. For details, see "Booting the target machines" (p. 107).

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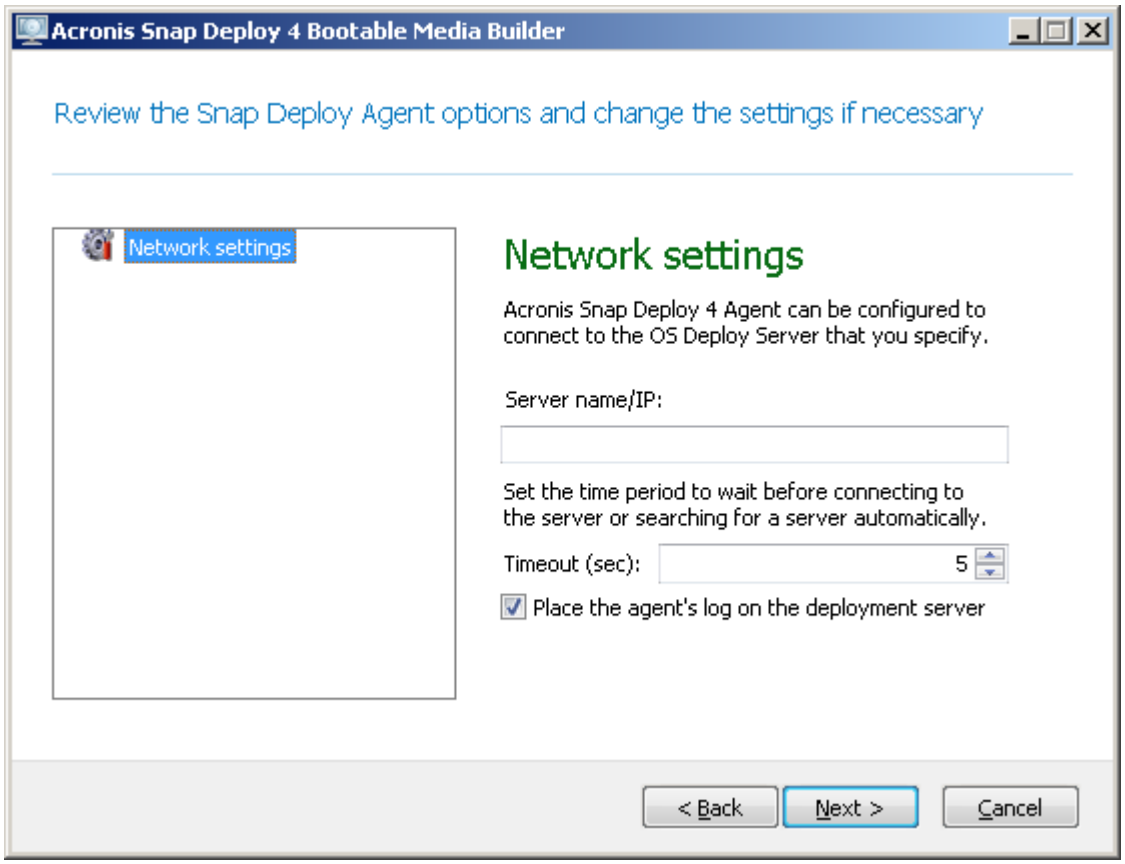
If not configured in either way, the deployment server will be found automatically. The agent will start the search after the number of seconds you specify in **Timeout (sec)**.


Acronis Snap Deploy 4 Bootable Media Builder
Review the Snap Deploy Agent options and change the settings if necessary
Network settings
Network settings
Acronis Snap Deploy 4 Agent can be configured to connect to the OS Deploy Server that you specify.
Server name/IP:
Set the time period to wait before connecting to the server or searching for a server automatically.
Timeout (sec):
5
Place the agent's log on the deployment server
< Back
Next >
Cancel

Settings for Acronis Snap Deploy 4 Agent

The option to save the agent's log to the deployment server is designed primarily for troubleshooting. The log will be available on the deployment server in the following folder: **%AllUsersProfile%\Application Data\Acronis\DeployServer\AgentsLogs**

7. Select the type of bootable media to create. You can:
   - Create a CD, a DVD, or other media such as a USB flash drive if the hardware BIOS allows for booting from such media.
   - Create an ISO image of a bootable disc to burn it later onto a blank disc or writing it to a USB flash drive.
   - Upload the selected components to Acronis PXE server. The previously uploaded components will be deleted from the PXE server before uploading the newly selected ones.

Note: *Acronis Snap Deploy 4 Standalone Utility can be placed on a physical media only. This component is not designed to boot from a PXE server.*

If you have chosen to create a physical media, insert a blank disc (so the software can determine its capacity) or attach a USB flash drive.

If you have chosen to create an ISO image of a bootable disc, specify the name of the ISO file and the folder in which to place it.

If you have chosen to upload the components to a PXE server, specify the name of the machine with the PXE server and provide the user name and password of an administrator on that machine.

8. [Optional.] Protect the components being uploaded to the PXE server with a password to prevent the components from unauthorized execution. The password prompt will come up when

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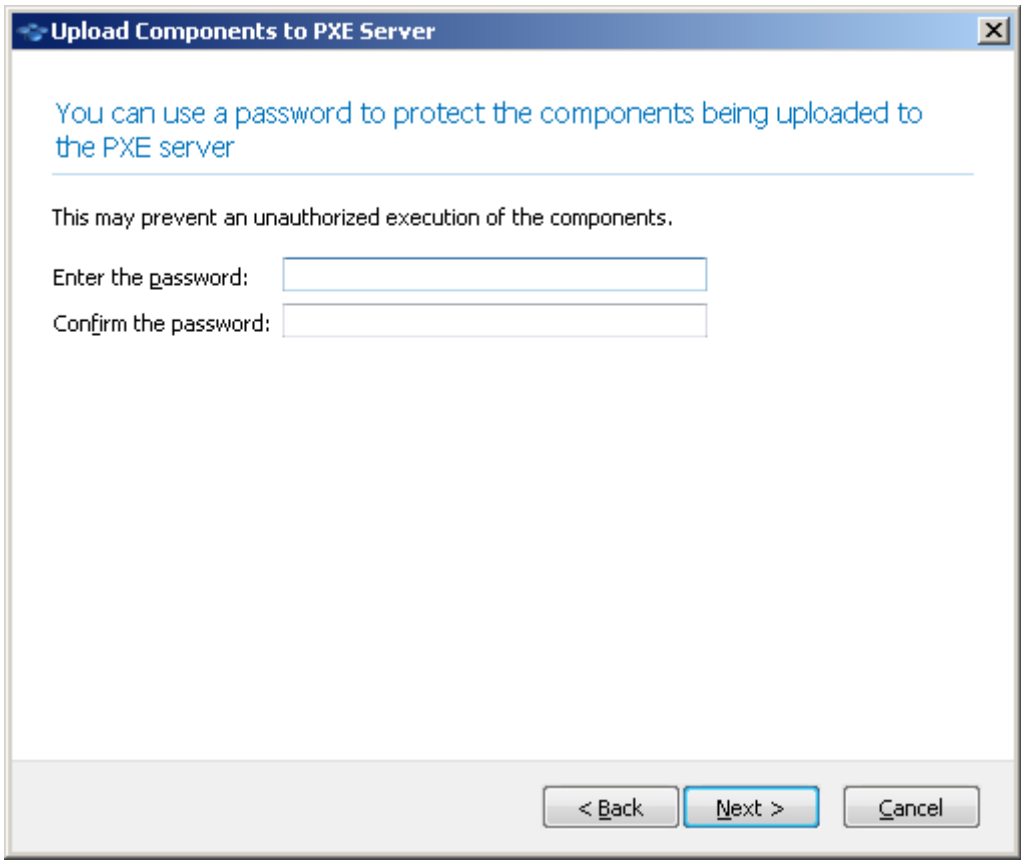
selecting a bootable component. No password is required to start the operating system on the machine.


Upload Components to PXE Server
You can use a password to protect the components being uploaded to the PXE server
This may prevent an unauthorized execution of the components.
Enter the password:
Confirm the password:
< Back
Next >
Cancel

Protecting the bootable components with a password

9. Click **Create**. After you create the disc, mark it and keep it in a safe place.

Note: *Components on an Acronis bootable media are based on a Linux kernel and are equipped with the Linux system and device drivers. Acronis regularly supplements the driver set with drivers for new devices. However, there may be a chance of drivers being incompatible with your hardware, so a bootable component cannot start, stops responding or cannot access the necessary device. In this case, consider creating a WinPE-based bootable media (p. 62) instead.*

7.2.2 Creating a WinPE-based bootable media

Windows Preinstallation Environment (WinPE) is a minimal Windows system based on the Windows Vista, the Windows Server 2008, or the Windows 7 kernels. WinPE is commonly used by original equipment manufacturers (OEMs) and corporations for deployment, test, diagnostic and system repair purposes.

Similarly to creating an Acronis bootable media (p. 59), you can create a bootable media that is based on WinPE and includes bootable components of Acronis Snap Deploy 4.

You may want to use a WinPE-based media instead of an Acronis bootable media for the following purposes:

- Performing imaging or deployment to machines whose hardware is not properly recognized from the Acronis bootable media (which is based on a Linux kernel)
- Performing deployment in the command-line mode (p. 133); for example, to deploy different master images to different target machines (p. 142)

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- Sending e-mail notifications about deployment

Note: *PE-based bootable media cannot be started in the UEFI mode.*

7.2.2.1 Components included in the bootable media

Each WinPE-based bootable media contains the following bootable components (p. 58):

- **Acronis Snap Deploy 4 Agent**
- **Acronis Snap Deploy 4 Master Image Creator**
- **Acronis Snap Deploy 4 Command-Line Utility**

The media also contains the Acronis Universal Deploy (p. 26) add-on.

7.2.2.2 Acronis Snap Deploy 4 PE Builder

Acronis Snap Deploy 4 PE Builder is a dedicated tool for creating a WinPE-based bootable media. The PE Builder is installed with Acronis Snap Deploy 4 Management Console.

The PE builder creates the bootable media by adding components of Acronis Snap Deploy 4 to a source file called a PE image.

A PE image is normally a .wim file. The PE builder can create a PE image automatically or use a PE image you provide. The PE image can be based on WinPE 2.*x* or WinPE 3.0.

The term “image” in “PE image” is unrelated to the notion of “master image.”

7.2.2.3 Creating a bootable media based on WinPE 2.x, 3.0 or 4.0

Installing Windows AIK

To be able to create a bootable media based on WinPE 2.*x* or WinPE 3.0, you must have Windows Automated Installation Kit (AIK) installed. For this purpose, install Acronis Snap Deploy 4 Management Console on a machine where Windows AIK is installed. If you do not have such machine, do the following:

1. Download Windows AIK; for example, from the Windows AIK 3.0 Web page.
2. Burn the AIK to a DVD or write it to a USB flash drive.
3. Attach the flash drive or insert the DVD in the media drive of a machine running Windows.
4. From this kit, install:
   a. Microsoft .NET Framework 2.0 (NETFXx86 or NETFXx64, depending on your hardware).
   b. Microsoft Core XML Services (MSXML) 5.0 or 6.0.
   c. Windows AIK.
5. Install Acronis Snap Deploy 4 Management Console.

Installing Windows ADK 1.0 for Windows 8

To be able to create a bootable media based on WinPE on Windows 8, you must have Windows Preinstallation Environment (Windows PE) installed. For this purpose, install Acronis Snap Deploy 4 Management Console on a machine where Windows PE is installed. If you do not have such machine, do the following:

1. Download Windows ADK from the Windows ADK 1.0 Web page.
2. Burn it to a DVD or write it to a USB flash key.

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3. Attach the flash key or insert the DVD in the media drive of a machine running Windows.
4. Select to install the following (Internet connection is required):
   - Deployment tools
   - Windows Preinstallation Environment.
5. Install Acronis Snap Deploy 4 Management Console.

Creating the bootable media

A bootable media based on WinPE 2.*x* requires at least 256 MB of memory to work. The recommended memory size for such media is 512 MB. A bootable media based on WinPE 3.0 or 4.0 requires at least 512 MB of memory to work.

The PE builder supports only 32-bit (x86) WinPE 2.*x* or 3.0 or 4.0. These WinPE distributions can also work on 64-bit (x64) hardware.

To create a bootable media based on WinPE 2.x or WinPE 3.0 or WinPE 4.0

1. Start Acronis Snap Deploy 4 Management Console.
2. On the **Tools** menu, click **Create PE image**.
3. Do one of the following:
   - If you do not have a PE image to base the media on, click **Create Windows PE 2.x or 3.0 automatically** or **Create Windows PE 4.0 or 3.0 automatically**.
   - If you want to base the bootable media on a specific PE image, click **Use WinPE files located in the folder I specify**, and then specify the folder with the WIM file of the image.
4. In **Network settings**, specify whether Acronis Snap Deploy 4 Agent will connect to a particular Acronis Snap Deploy 4 OS Deploy Server.
5. In **Autostart**, specify whether to start Acronis Snap Deploy 4 Agent automatically after a time-out.
6. Select how you want to create the bootable media.
   - If you want to create a physical media, select **ISO image**. The software will create an ISO file that you can later burn to a DVD or write to a USB drive.
   - If you want to upload the bootable components to Acronis PXE server, select **Acronis PXE Server**.
   - If you want to create a PE image (a WIM file) to later upload it to the PXE server (p. 65), select **WIM image**. You may want to select this setting if you are planning to use Preinstallation Environment for unattended deployment to specific machines (p. 100). If so, make sure that you have selected to start the agent automatically (see the previous step).

     Tip: *The setting **WIM image** enables you to create a PE image for any future purpose, such as for adding other tools in addition to Acronis components.*
7. Do one of the following:
   - If you have chosen to create an ISO or a WIM file, specify the full path to the resulting file, including the file name.
   - If you have chosen to upload the components to Acronis PXE Server, specify the machine with the PXE server and provide the user name and password of an administrator on it.
8. [Optional.] Specify the storage controller drivers and/or network adapter drivers that you want to add to the media. Click **Add** and specify the path to the necessary .inf file for a corresponding SCSI, RAID, SATA controller or a network adapter. You will have to repeat this procedure for each driver you want to be included in the bootable media.

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9. Check your settings in the summary screen, and then click **Create**.
10. If you have chosen to create an ISO file, burn the file to a DVD by using a third-party tool, or write the file to a USB drive.

7.2.2.4 Uploading a PE image to Acronis PXE Server

You can upload a WIM file of WinPE 2.*x* or WinPE 3.0 to Acronis PXE Server. Such file is called a PE image. We recommend creating the WIM file by using Acronis Snap Deploy 4 PE Builder (p. 63).

To upload a PE image

1. Start Acronis Snap Deploy 4 Management Console.
2. Click **PXE server**. If prompted, specify the machine where Acronis PXE Server is installed.
3. Click **Upload PE image**.
4. Specify the path to the WIM file of WinPE 2.*x* or 3.0 that you want to upload.
5. Check your settings in the summary screen, and then click **Create**.

7.3 Configuring Acronis PXE Server

You can configure Acronis PXE server:

- When creating an Acronis bootable media (p. 59) or a WinPE-based bootable media (p. 62).
- When creating a bootable media for user-initiated deployment (p. 115).

Alternatively, you can use direct server configuration, as follows.

To perform a direct configuration of the PXE server

1. Start Acronis Snap Deploy 4 Management Console.
2. In the navigation pane, click **PXE server**.
3. If the PXE server is installed on a different machine, click **Connect to the PXE server**, and then specify the name or IP address of that machine. In logon settings, specify the user name and password of an administrator on that machine.

When connected to the PXE server, you can perform the following operations by clicking the corresponding buttons on the toolbar:

- **Upload components**: Upload bootable components (p. 58), such as Acronis Snap Deploy 4 Agent, in the same way as when creating an Acronis bootable media (p. 59). The previously uploaded components will be deleted from the PXE server before uploading the newly selected ones.
- **Upload PE image to PXE**: Upload the Preinstallation Environment (PE) image (a .wim file) that was previously created with Acronis Snap Deploy 4 PE builder. For details, see “Uploading a PE image to Acronis PXE Server” (p. 65).
- **Remove**: Remove a component or PE image from the PXE server.
- **Disable PXE Server**: Disable the PXE server. The service does not stop, but no longer responds to incoming requests.

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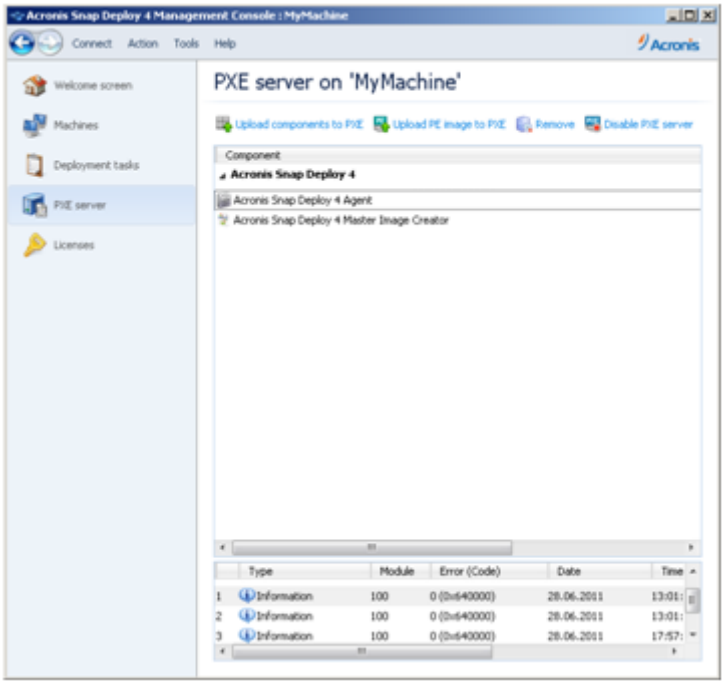
- **Enable PXE Server**: Enable the previously disabled PXE server.



Two bootable components of Acronis Snap Deploy 4 are uploaded to the PXE server.

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8 Creating a master image

To be able to deploy a system, you need to create the desired system configuration and then to save an image of the system's hard disk or volume to a network folder, detachable media (such as a USB drive) or removable media (such as a DVD).

This section describes how to create a master image by using Acronis Snap Deploy 4.

In addition, Acronis Snap Deploy 4 can use any of the following files as a master image:

- Backups created with the Acronis True Image, Acronis Backup & Recovery 10, and Acronis Backup & Recovery 11 product family, including password-protected backups
- Virtual Hard Disk (VHD) files

For information about deploying an image, see "Deploying a master image" (p. 79).

8.1 Preparation of the master operating system

In the Acronis environment and Windows Preinstallation Environment (any case except the command-line mode (p. 133)), Acronis Snap Deploy 4 automatically configures each of the deployed systems by using the deployment settings you specify.

Alternatively, you can prepare a master operating system by using the Microsoft System Preparation Tool (Sysprep) before creating the image of the system. Acronis Snap Deploy 4 does not configure the deployed systems in this case.

The Sysprep tool is designed for corporate system administrators, original equipment manufacturers (OEMs), and others who need to deploy and automatically configure operating systems on multiple machines.

After an operating system that was prepared with Sysprep is deployed to machines, Sysprep configures settings that are normally unique to each machine. In particular, Sysprep does the following:

- Generates a unique security identifier (SID) for the new machines
- Initiates Windows mini-setup for Plug and Play devices
- Applies the machine name, domain or workgroup membership, and other settings specified in the Sysprep.inf answer file

You can either download Sysprep from the Microsoft Web site, or extract it from the deploy.cab file, which is located on the installation disk of Windows NT, Windows 2000, Windows XP, and Windows Server 2003. In Windows Vista, Windows 2008, and Windows 7, the Sysprep tool is located in the folder Windows\System32.

Important: *If you are planning to use Sysprep, we strongly recommend that you read articles about Sysprep and disk duplication in the Microsoft Knowledge Base.*

8.2 Online vs. offline imaging

You can create the master image in either of these ways:

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- In Windows, by using Acronis Snap Deploy 4 Management Agent installed on the master machine. This type of imaging is called *online imaging*.
- By using a bootable media (either Acronis media or WinPE-based media) with Acronis Snap Deploy 4 Master Image Creator, or by using the command-line utility in a WinPE-based bootable media. This type of imaging is called *offline imaging*.

This section describes imaging with Acronis Snap Deploy 4 Management Agent and Acronis Snap Deploy 4 Master Image Creator. For information about imaging in the command-line mode, see "Command-line mode and scripting under WinPE" (p. 133).

8.3 Performing online imaging

Online imaging means that the master system is imaged live (without restarting the machine or suspending operations). Online imaging can be performed remotely whenever you need. The disadvantage is that you have to install imaging software that is included in the master image. This is not always rational.

To perform online imaging

1. Install Acronis Snap Deploy 4 Management Console.
2. Configure the master system.
3. Install Acronis Snap Deploy 4 Management Agent on the master system either locally by using the setup program, or remotely by using Acronis Snap Deploy 4 Management Console. Once Acronis Snap Deploy 4 Management Agent is installed, you can image the master system online (without a restart) at any time.
4. Start the Acronis Snap Deploy 4 Management Console.
5. Connect to the master machine.
6. Click **Create image -> Next -> A master image**.

   Tip: *The alternative selection,* ***A bootable media****, enables you to create a bootable media (p. 59) for offline imaging (p. 68).*

7. Follow the steps of the Master Image Creator wizard (p. 71).

8.4 Performing offline imaging

Offline imaging means that the master system is stopped and the master machine boots into the Acronis environment or into Windows Preinstallation Environment.

To perform offline imaging

1. Install Acronis Snap Deploy 4 Management Console.
2. Do one of the following:
   - Create a bootable media (p. 58) that contains Acronis Snap Deploy 4 Master Image Creator.

   OR

   - Install Acronis PXE Server, connect the console to the PXE server (p. 65), and upload Acronis Snap Deploy 4 Master Image Creator. Make sure that network booting is enabled on the master machine (p. 102).

   Tip: *While creating the bootable media or uploading Acronis Snap Deploy 4 Master Image Creator to the PXE server, you can configure the image creator to start automatically after a time-out.*

3. Configure the master system.

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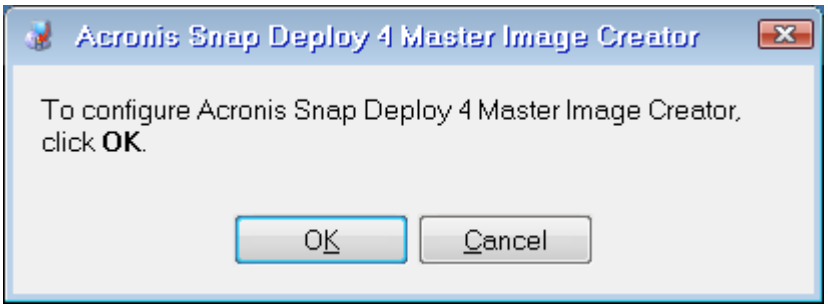
4. Depending on your choice in step 2, boot the master machine into Acronis Snap Deploy 4 Master Image Creator from the bootable media or from the PXE server.

   The boot menu appears on the master machine.

The boot menu on the master machine

5. In the boot menu, click **Acronis Snap Deploy 4 Master Image Creator**.
6. The master image creator establishes a network connection to be able to save the image in a network folder. A dialog box appears asking whether you want to configure the network connection that will be used by the image creator.

   By default, Acronis Snap Deploy 4 Master Image Creator uses DHCP auto configuration. Ignore the prompt (click **Cancel**) if there is a DHCP server on the network or the image has to be placed on a local hard disk or a removable media.



Prompt for configuring the master image creator

   The master image creator can be preconfigured to apply the default network settings automatically after a time-out.

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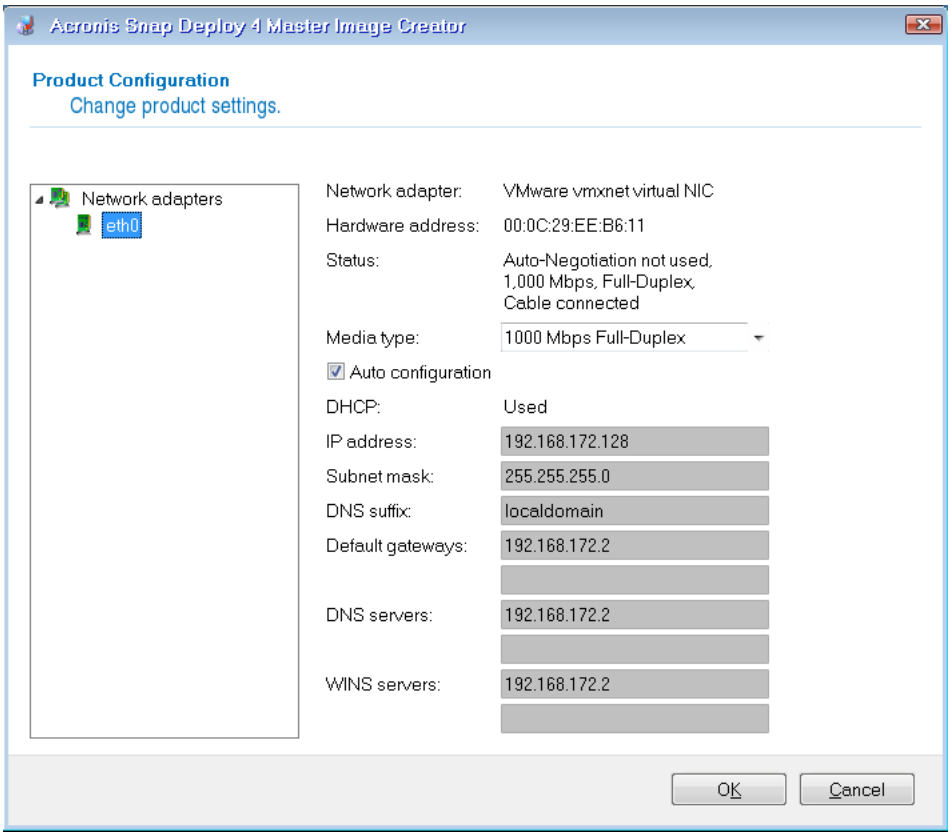
The manual configuration is needed if automatic configuration is not possible (no DHCP server on the network) or does not succeed. To configure the network connections manually, click **OK** in the prompt window.



Acronis Snap Deploy 4 Master Image Creator configuration: network settings

Set the preferable values and click **OK**.

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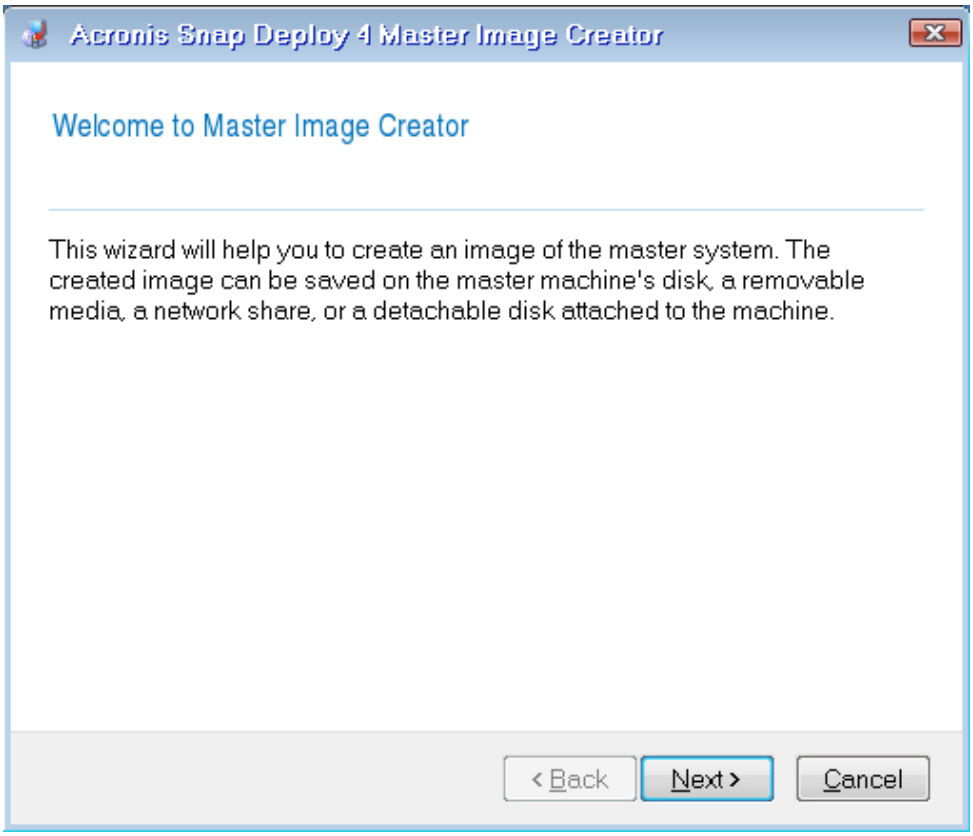
7. When Acronis Snap Deploy 4 Master Image Creator starts, it displays the Master Image Creator welcome window.


Acronis Snap Deploy 4 Master Image Creator
Welcome to Master Image Creator
This wizard will help you to create an image of the master system. The created image can be saved on the master machine's disk, a removable media, a network share, or a detachable disk attached to the machine.
< Back
Next >
Cancel

Master Image Creator Wizard: welcome window

8. In this window, click **Next**, and then follow the steps of the Master Image Creator wizard (p. 71).

8.5 Steps of the Master Image Creator wizard

This section describes the steps of the Master Image Creator wizard in the order that they appear.

Use the **Next** and **Back** buttons to go between steps.

8.5.1 Disks or volumes to image

Select the disks or volumes that you want to include in the master image.

You can select any set of disks and volumes. The master boot record (MBR) will be also included in the image.

Important: *An operating system includes a loader: a small program that loads the main part of the operating system. The loader and the rest of the operating system may reside on different volumes. For example, Windows 7 and Windows Server 2008 R2 place the loader on a hidden volume called* ***System Reserved****. If your operating system and its loader reside on different volumes, always include both volumes in the image. A volume with the loader is usually marked as the active volume and is shown with the* ***Act.*** *flag in the list. The volumes must also be deployed together; otherwise, there is a high risk that the operating system will not start.*

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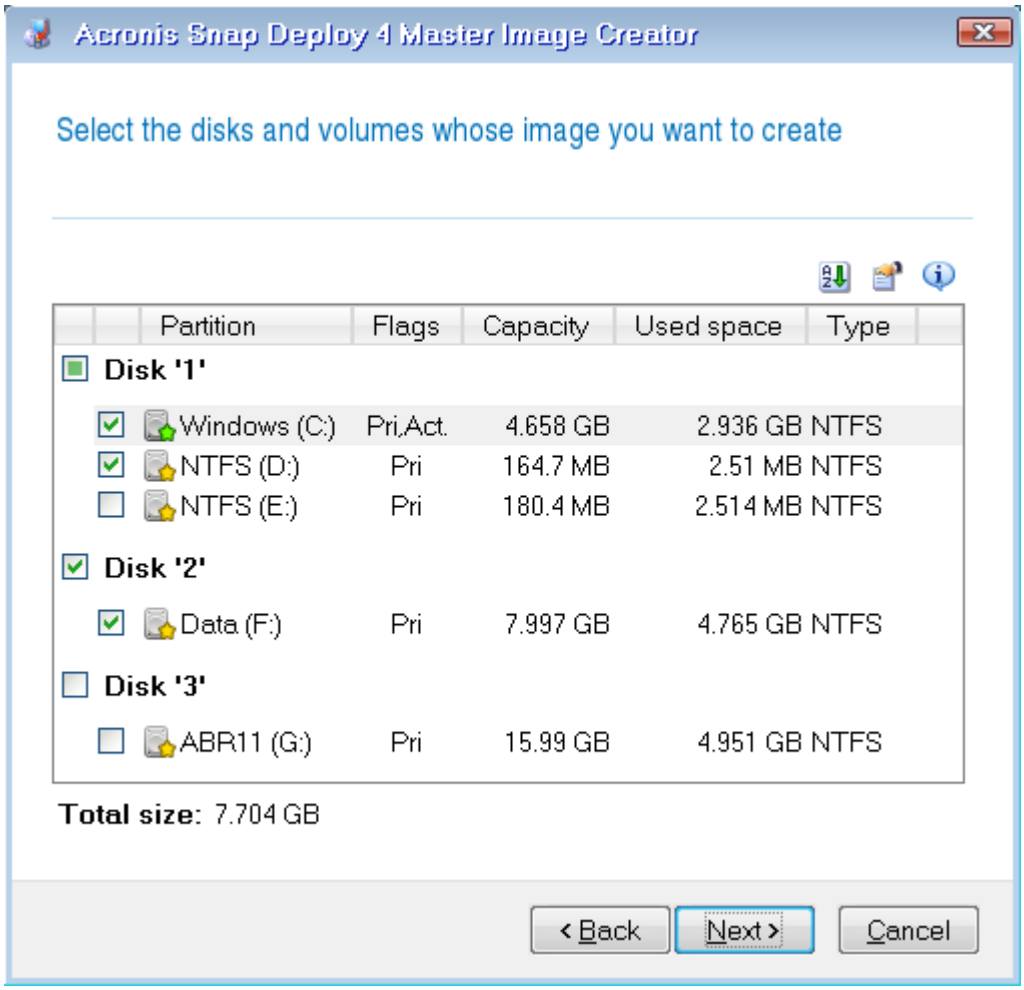
Also, machines with UEFI architecture have a special ESP partition (EFI System partition). If you are deploying a UEFI machine image to another UEFI machine, you should deploy ESP partition as well. Otherwise, the target machine will be non-bootable after deployment. When deploying a UEFI machine image to a BIOS machine, it is not necessary to deploy the ESP partition.



Selecting disks and volumes to image

Limitations

The following volumes cannot be included in the master image:

- Dynamic disks
- Linux GPT disks on UEFI architecture

8.5.2 Image name and location

Acronis Snap Deploy 4 Master Image Creator can save an image in any of the following locations:

- In a network folder
- On an internal hard disk of the master machine
- On a USB or FireWire (IEEE-1394) storage device (such as a flash drive) that is attached to the master machine
- On a DVD+R/RW, DVD-R/RW, CD-R/RW, or recordable Blue-ray Disc (BD-R, BD-RE) that is loaded in the media drive of the master machine

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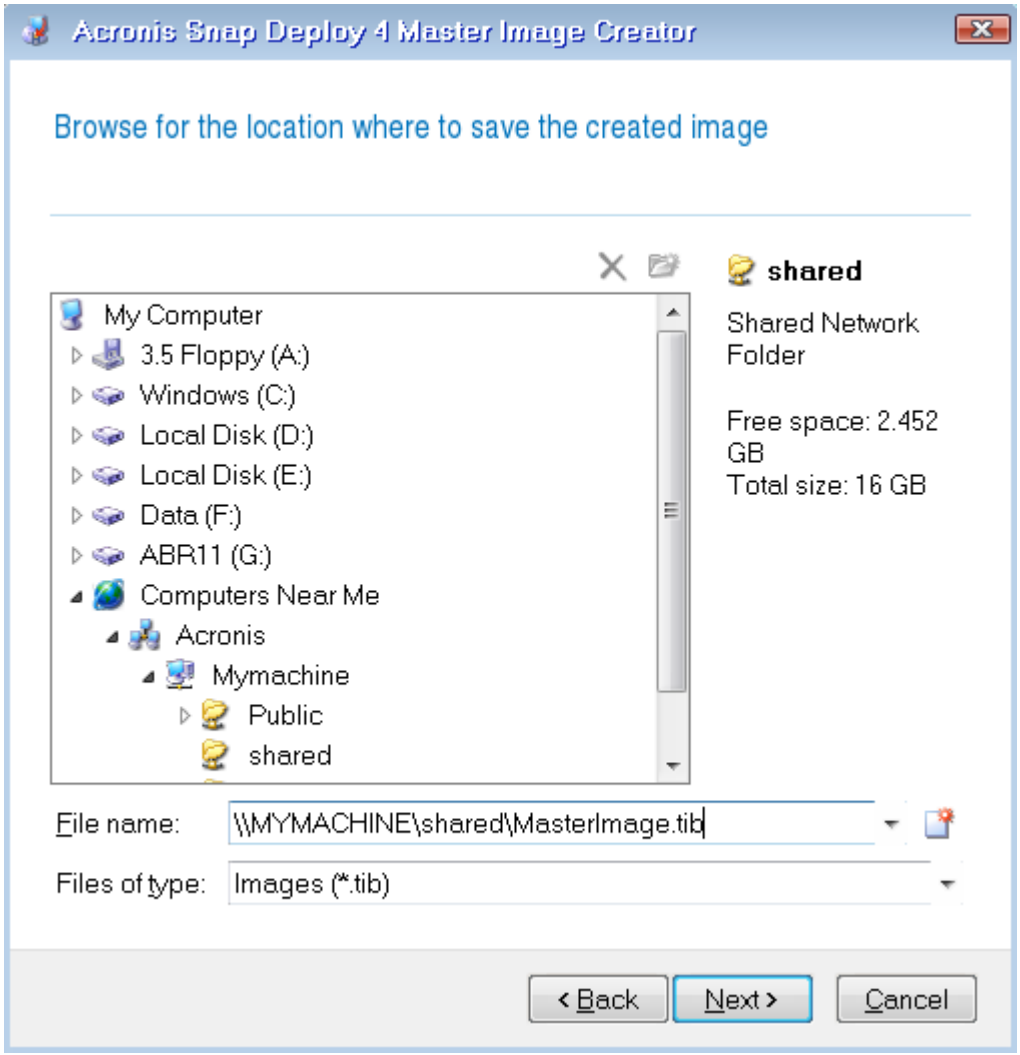
A sizeable image can be split between multiple media automatically.

Select the image location in the device tree. In **File name**, type the file name of the image. To generate a file name that is unique in the selected location, click **Generate a name for the file**.



Note: *Acronis bootable media uses NetBIOS networking protocol to resolve Acronis Snap Deploy 4 OS Deploy Server in a network. NetBIOS protocol uses ANSI characters for host names. So, machines that have non-English characters in their names cannot be accessed from Acronis bootable media. If the name of the Acronis Snap Deploy 4 OS Deploy Server machine contains non-English characters, use the machine's IP-address to specify it in the network.*

8.5.3 Options of imaging

You can set up the following options for creating the master image.

Protection

Defines whether to protect the master image with a password. You may want to use this option to prevent unauthorized deployment.

The preset is: No password

To specify a password, type it in the **Enter the password** and **Confirm the password** fields.

Setting up a password does not lead to encrypting the contents of the image.

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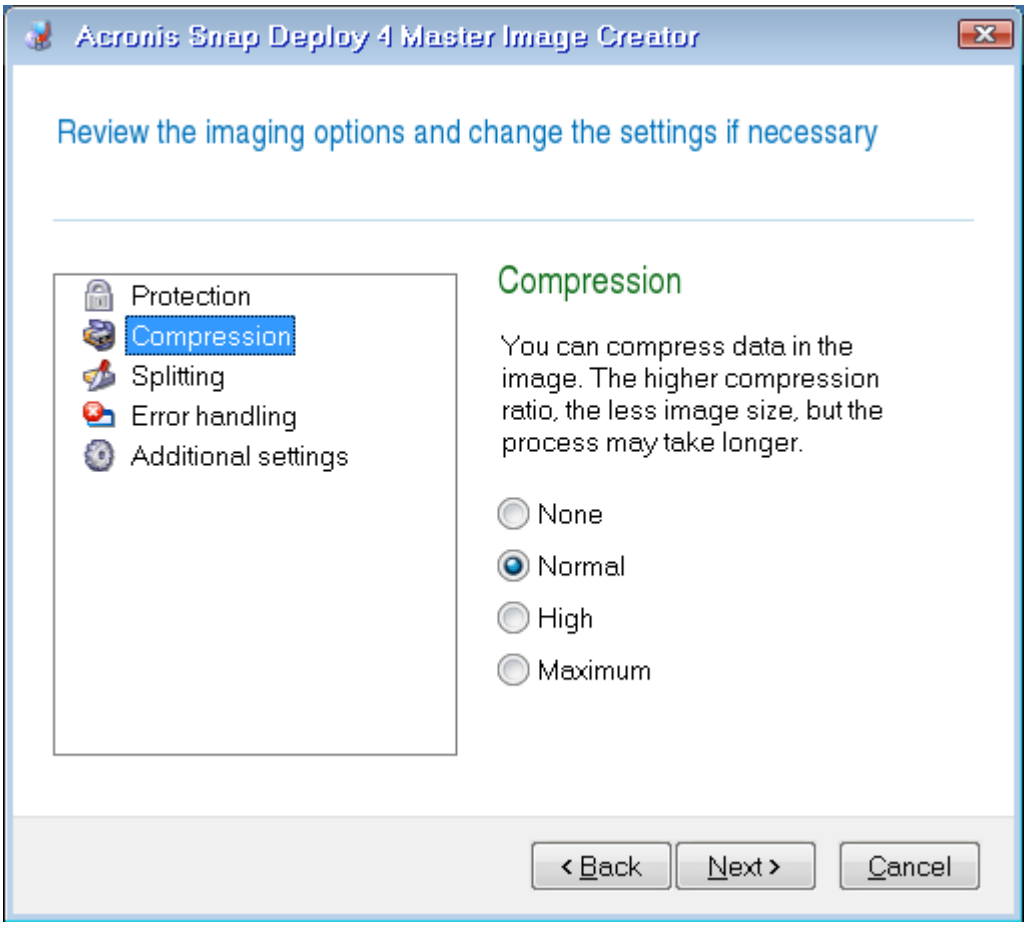
Compression

Defines the compression level for the image.

The preset is: **Normal**

A higher compression level may lead to a smaller size of the image, but creating the image will take longer. The default **Normal** level is recommended in most cases.



Selecting the data compression level

Process priority

This option is available only for online imaging (p. 67).

The preset is: **Low**

Defines the priority of the imaging process.

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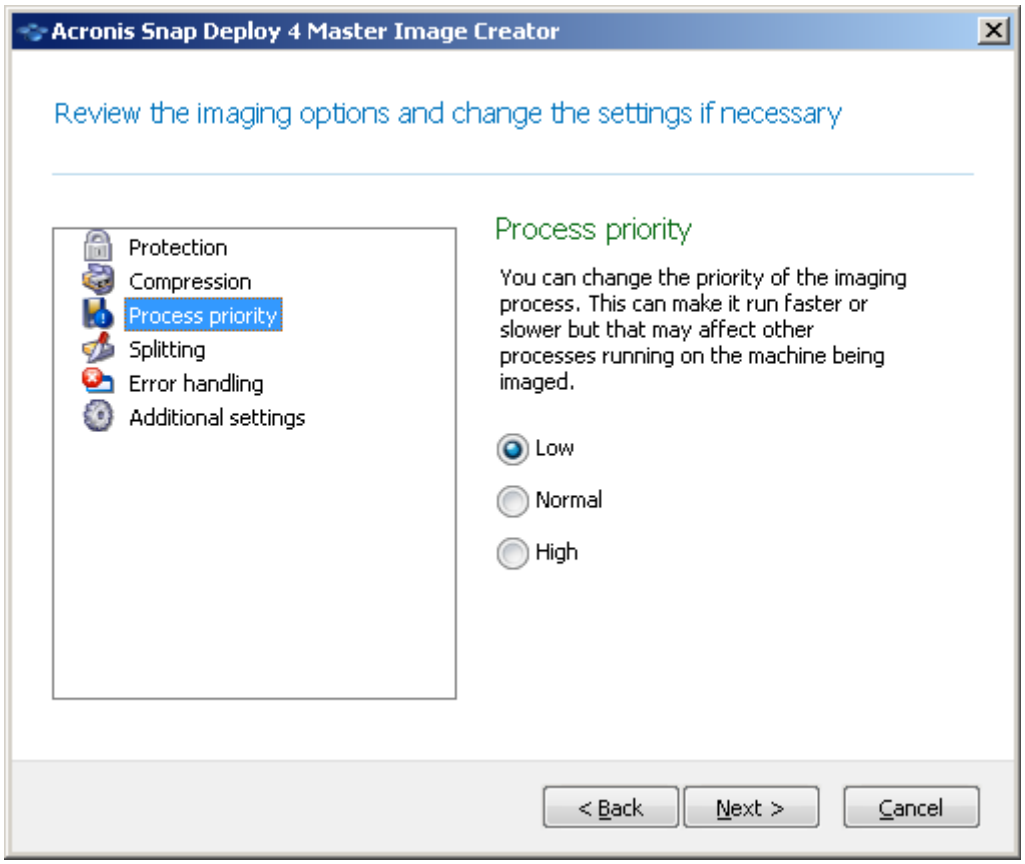
The priority of any process running in the operating system determines the amount of CPU usage and system resources allocated to that process. Decreasing the image creation priority will free more resources for other programs. Increasing the image creation priority could speed up the imaging by taking resources from the other running processes. The effect will depend on the total CPU usage and other factors.


Acronis Snap Deploy 4 Master Image Creator
Review the imaging options and change the settings if necessary
Protection
Compression
Process priority
Splitting
Error handling
Additional settings
Process priority
You can change the priority of the imaging process. This can make it run faster or slower but that may affect other processes running on the machine being imaged.
Low
Normal
High
< Back
Next >
Cancel

Setting up the process priority

Splitting

Defines how to split a sizable image into two or more files that together make up the original image.

The preset is: **Only when it is required**

With this setting, the program will act as follows.

When creating the image on a hard disk

If the selected disk has enough space and its file system allows the estimated file size, the software will create a single image file.

If the storage disk has enough space, but its file system does not allow the estimated file size, the image will automatically be split into two or more files. Such might be the case when the image is placed on FAT16 and FAT32 file systems that have a 4-GB file size limit.

If free space on the disk runs out while creating an image, the operation will stop with an error.

When creating an image on a CD-R/RW, DVD-R/RW, DVD+R/RW, or recordable Blu-ray Disc (BD-R, BD-RE)

Acronis Snap Deploy 4 Master Image Creator will ask you to insert a new disc when the previous one is full.

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Alternatively, you can click **Always, into the files of fixed size** and type the desired file size or select it from the list. The image will then be split into multiple files of the specified size. This comes in handy when creating an image that you plan to burn to multiple discs later on.

You can enter the file size in bytes (**B**), kilobytes (**KB**), megabytes (**MB**), gigabytes (**GB**), or terabytes (**TB**).

Note: Creating images directly on CD-R/RW, DVD-R/RW, DVD+R/RW, or recordable Blu-ray Discs usually takes more time than it would on a hard disk.

Error handling

Defines how to handle errors that may occur during imaging.

Ignore bad sectors

The preset is: **Disabled**

When the option is disabled, the software will display a pop-up window each time it comes across a bad sector and ask for a user decision as to whether to continue or stop imaging.

Enable silent mode (no prompts during imaging)

The preset is: **Disabled**

With the silent mode enabled, the software will automatically handle situations requiring user interaction (except handling bad sectors, which is defined by the **Ignore bad sectors** option). If an operation cannot continue without user interaction, it will fail. Details of the operation, including errors, if any, can be found in the operation log.

In case of error, re-attempt in (minutes)

The preset is: **5**

When a recoverable error occurs, the software re-attempts to perform the unsuccessful operation. You can set the time interval between attempts. The attempts will be stopped as soon as the operation succeeds.

For example, if the location of the image on the network becomes unavailable or not reachable, the software will attempt to reach the destination every five minutes. The attempts will be stopped as soon as the connection is resumed.

Additional settings

Check the image when it is created

The preset is: **Disabled**

If enabled, the program will check the integrity of the just-created image.

You can perform this check after imaging (p. 78).

8.5.4 Comments and summary

We recommend providing a comment for easy identification of the master image.

After you click **Next**, the summary of the imaging procedure appears. Check the settings and then click **Proceed**.

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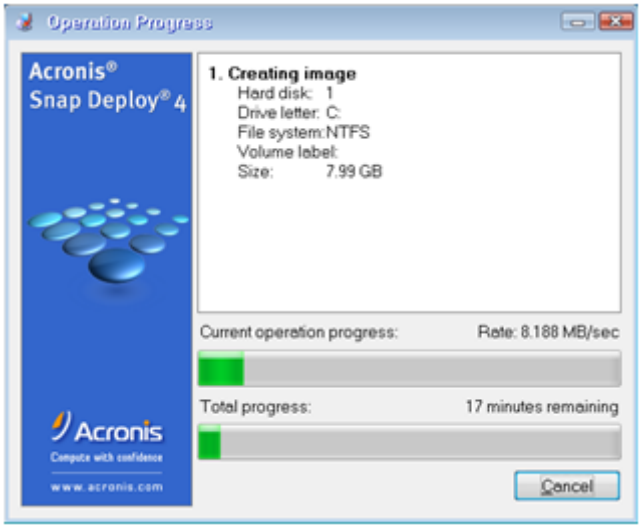
The imaging operation starts and its progress is displayed.



Acronis Snap Deploy 4 is taking the master image

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9 Validating a master image

You can ensure that the master image is not damaged by validating it.

To validate a master image

1. Start Acronis Snap Deploy 4 Management Console.
2. Connect the management console to a machine where Acronis Snap Deploy 4 Management Agent is installed.
3. On the **Action** menu, click **Validate image**.
4. Select the master image that you want to validate.
5. Click **Validate** in the summary window.

The validation operation starts. You can stop the operation if need be, by clicking **Cancel**.

After the validation is complete, the software shows the result.

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10 Deploying a master image

This section describes how to deploy a master image to one or more machines.

Caution: *Deployment to a machine involves deleting some or all data that is currently stored on that machine. Make sure that you are performing deployment to the correct machines and to the correct disks on those machines.*

10.1 Files supported as master images

Acronis Snap Deploy 4 can perform deployment from any of the following files:

- A master image created by Acronis Snap Deploy 4 or by an earlier version of the software
- A disk-level backup created by the Acronis True Image, Acronis Backup & Recovery 10, or Acronis Backup & Recovery 11 product family
- A Virtual Hard Disk (VHD) file

Support for Acronis True Image, Acronis Backup & Recovery 10, and Acronis Backup & Recovery 11 backups

These Acronis products save the disks and volumes of a machine to a file called a backup.

Similarly to master images, backups are stored as .tib files. You can specify such file as you would the master image.

Some backups (known as incremental and differential backups) depend on other backups. To ensure that Acronis Snap Deploy 4 finds all of the backups it needs, we recommend leaving the backup in the location where it was created by your Acronis product.

If the backup is split into two or more parts, make sure that all these parts are in the same folder. To specify such a backup, specify any one of these parts.

The backup can contain disks of various types, but **only basic disks** are available for deployment.

Support for VHD files

These files store disks and volumes of a machine. Such a file can be created by the following programs:

- Microsoft Virtual PC 2007 SP 1.0, Windows Virtual PC, and Microsoft Virtual Server
- Windows Backup (in Windows 7)
- Acronis True Image Home 2010 and later

You can perform deployment from a VHD file that contains both basic and dynamic volumes. However, any dynamic volumes, such as simple or spanned volumes, will be deployed as basic volumes.

Important: *If you created the VHD file by using the Windows Backup program, we recommend leaving such a file in its original location. If you must move the VHD file to a new location, make sure to move the entire folder containing this file, including subfolders and supplementary files such as .xml files. Otherwise, the deployment operation may fail.*

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If the VHD file is split into two or more parts, make sure that all these parts are in the same folder. To specify the VHD file, select any one of these parts.

10.2 Licenses for deployment

Acronis Snap Deploy 4 OS Deploy Server performs deployment to a machine by using an available machine license or deployment license (p. 16). Once used by one machine, the license cannot be reused by another machine.

A machine license becomes used when the first deployment to the machine starts. The license remains used regardless of the result of deployment.

Normally, a deployment license becomes used if the deployment has been successful. If the deployment has failed, Acronis Snap Deploy 4 OS Deploy Server can use the license for another deployment to the same machine or to a different machine.

In some cases, a deployment license becomes used even if the deployment has failed. Acronis Snap Deploy 4 OS Deploy Server will use the license for the next deployment to the same machine.

10.3 Deployment templates

A deployment template is a set of configuration parameters of the deployment operation. These parameters include:

- A path to the master image.
- The operation mode (multicast or unicast, how to handle the target disk free space, and so on).
- Settings to be applied to the deployed systems (for example, machine names and user accounts).
- Operations to be performed on the deployed systems (transfer files, run applications, shut down, restart).

All deployment templates are saved on Acronis Snap Deploy 4 OS Deploy Server. You can use a saved template in the future.

When setting up a deployment operation (deployment task), you must specify a deployment template. You can simply select a saved template and set up the condition for starting deployment. Alternatively, you can create a new template.

Templates also enable user-initiated deployment (p. 113). In this mode, users can perform one-click deployment to their machines without the administrator's assistance. To set up this mode, the administrator must create one or more deployment templates.

To view or edit the list of saved templates, open the **Templates** window (p. 99).

10.3.1 Creating a deployment template

You can create a deployment template when you create a deployment task or set up user-initiated deployment (p. 115).

Alternatively, you can create a deployment template in the **Templates** window (p. 99).

This section describes how to use the Create Deployment Template Wizard.

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10.3.1.1 Master image selection

In this step, specify the following:

- The master image
- The user name and password for the network folder if the image is on the network. The best practice is to map the network folder as a local drive (on the desktop, right-click **Computer** or **My Computer**, and then click **Map Network Drive**)

In addition to images created by Acronis Snap Deploy 4, you can perform deployment from disk-level backups created by Acronis True Image, Acronis Backup & Recovery 10, Acronis Backup & Recovery 11, and from Virtual Hard Disk (VHD) files. For details, see “Files supported as master images”.

Image location

Acronis Snap Deploy 4 OS Deploy Server can deploy an image located:

- In a network folder.
- On the internal hard disk of the deployment server.
- On a USB or FireWire (IEEE-1394) storage device (such as a flash drive) attached to the deployment server.
- On DVD+R/RW, DVD-R/RW, CD-R/RW, or recordable Blu-ray Discs (BD-R, BD-RE) loaded in the media drive of the deployment server.

The best practice is keeping images on the deployment server’s hard disk. This minimizes network traffic during deployment.

The image created on removable media has to fit into one media disk. To deploy an image spread over several CDs, DVDs or other media, copy all parts of the image to the same folder on the deployment server or to a network folder.

Acronis Snap Deploy 4 Standalone Utility can deploy images located:

- In a network folder.
- On a USB or FireWire (IEEE-1394) storage device (such as a flash drive) attached to the managed machine.
- On DVD+R/RW, DVD-R/RW, CD-R/RW, or recordable Blu-ray Discs (BD-R, BD-RE) loaded in the managed machine’s media drive.

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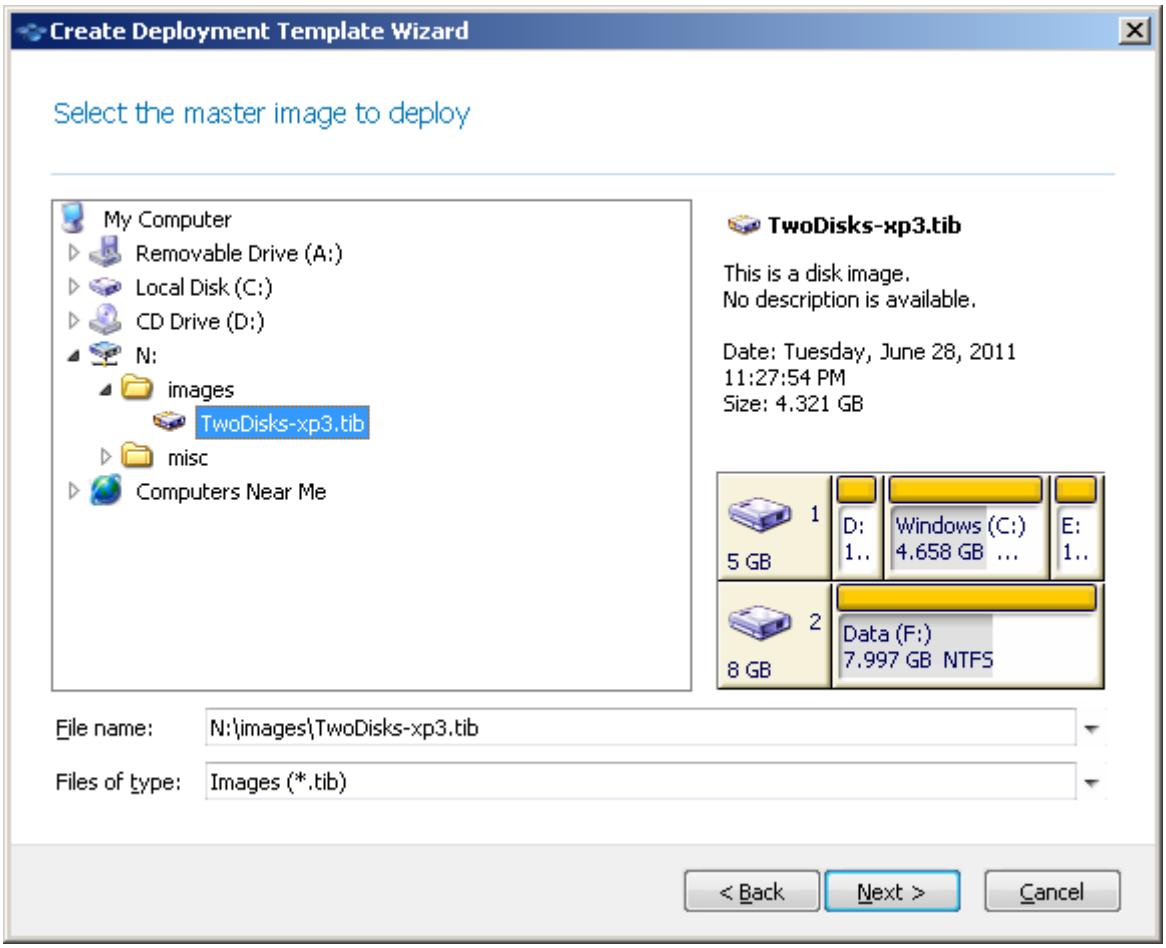
The image created on removable media has to fit into one media disc. To deploy an image spread over several CDs, DVDs or other media, copy all parts of the image to the same folder on an external drive or to a network folder.



Selecting a master image

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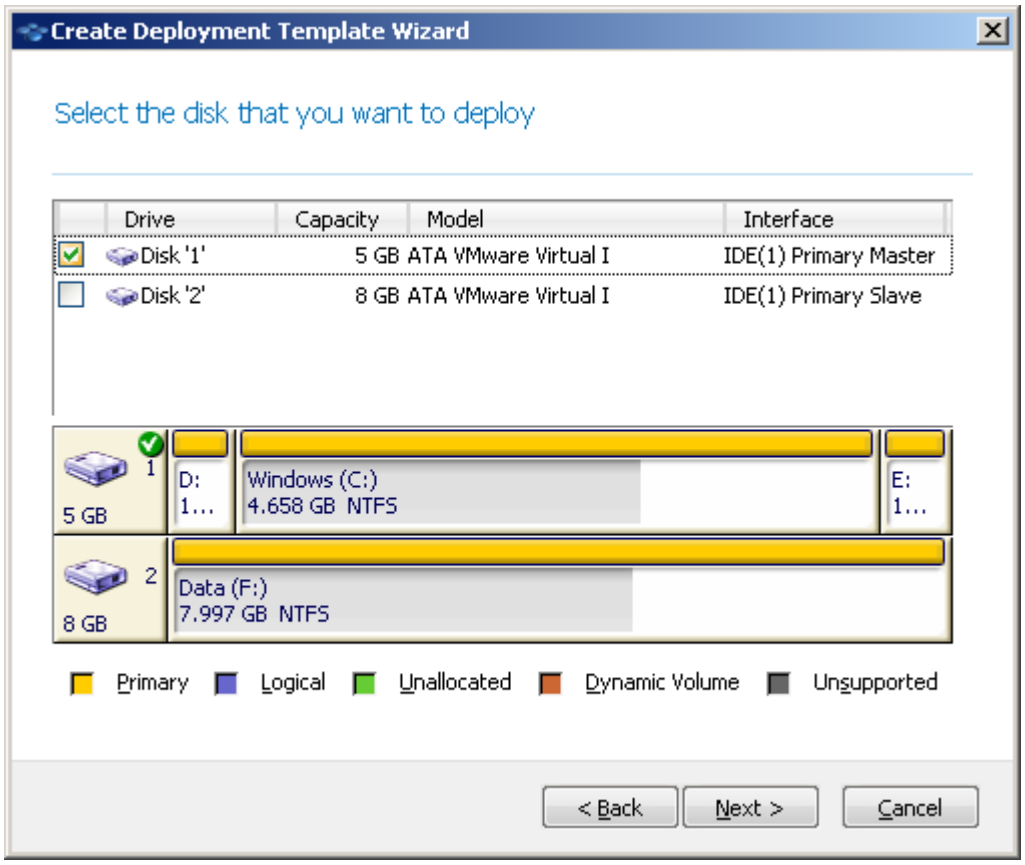
10.3.1.2 Disk and volume selection

If the image contains more than one disk, specify the disk that you want to deploy, and then click **Next**. You can select only one disk.



Selecting a disk from the master image

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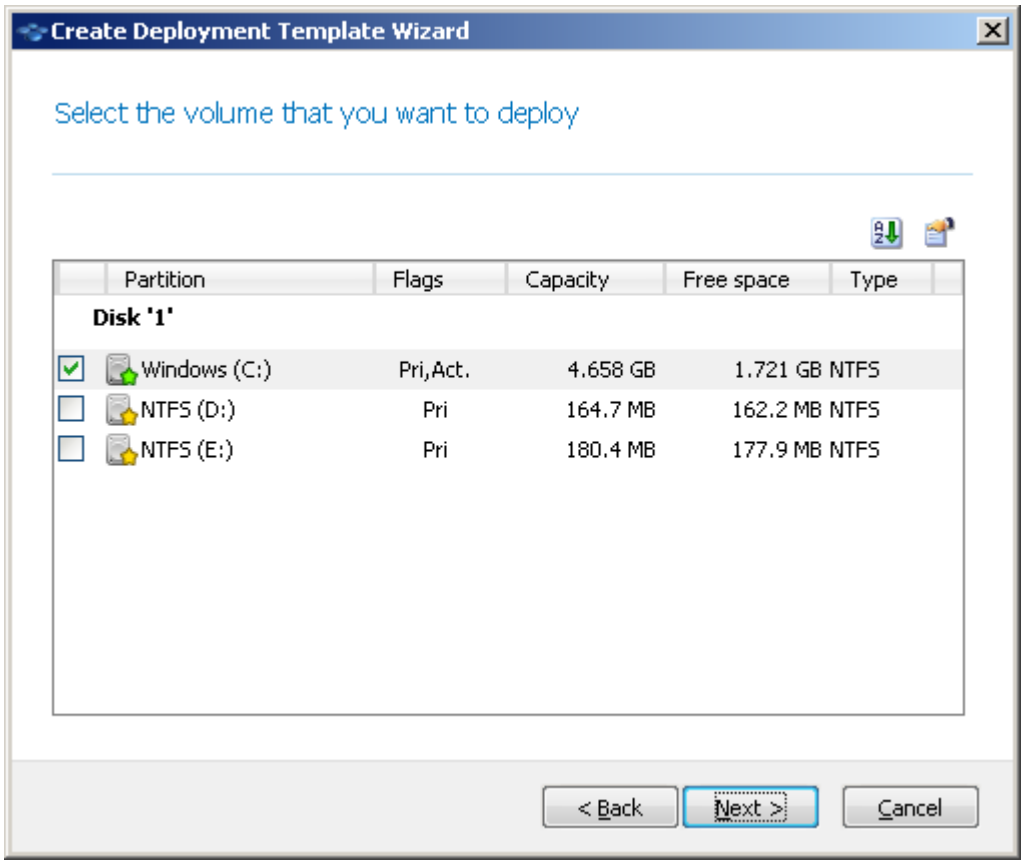
If the disk you selected contains more than one volume, specify the volumes that you want to deploy. You can select one or more volumes.



Selecting disk volumes to deploy

The further steps will depend on how many volumes you select.

- If you deploy **only one volume,** it is assumed that the target disk has volumes, so **you can select the target volume, to deploy over it.** Other volumes will remain untouched in this case. Alternatively, you can choose to delete all volumes that currently exist on the target disk.
- Deploying **more than one volume** will **delete all volumes on the target disk.** Only the newly deployed volumes will exist on the disk after deployment.

The master boot record (MBR) is always deployed from the image regardless of your choice.

Important: *An operating system includes a loader: a small program that loads the main part of the operating system. The loader and the rest of the operating system may reside on different volumes. For example, Windows 7 and Windows Server 2008 R2 place the loader on a hidden volume called* ***System Reserved****. If your operating system and its loader reside on different volumes, always include both volumes in the image. A volume with the loader is usually marked as the active volume and is shown with the* ***Act.*** *flag in the list. The volumes must also be deployed together; otherwise, there is a high risk that the operating system will not start.*

10.3.1.3 Deployment settings

In this step, specify the deployment settings.

The default values for these settings are taken from the default settings (p. 98).

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Most settings are related to configuring the operating system of the target machine. Such settings are unavailable if the volumes you selected do not contain an operating system for which changing settings is supported (p. 15). You always can specify general settings such as the disk to perform the deployment to.

These settings can be overridden by individual settings (p. 129) for a machine.

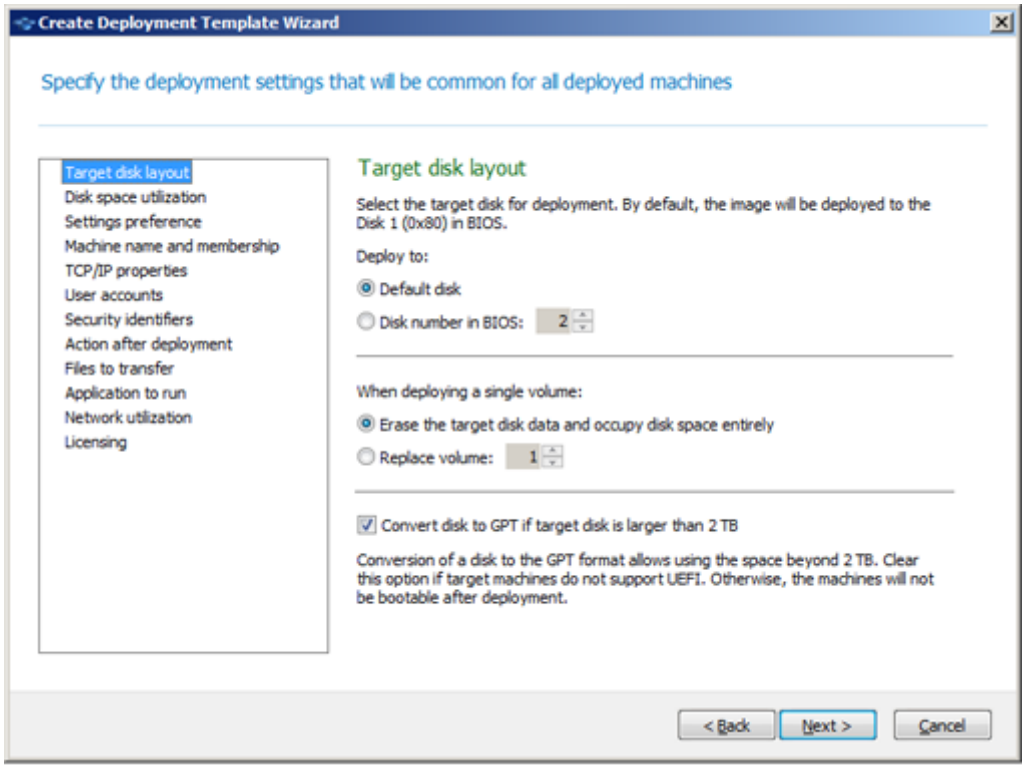
Target disk layout

This setting determines the target disk for deployment, and what space on the target disk will be available for deploying the master image.

The preset is: **Default disk**

The selection **Default disk** means that the image will be deployed to the hard disk whose number in the BIOS is 1. (Note for advanced users: for such disk, the hexadecimal value known as the physical drive number is 0x80.)

You can specify a different disk by clicking **Disk number in BIOS** and then typing or selecting the disk number.


Create Deployment Template Wizard
Specify the deployment settings that will be common for all deployed machines
Target disk layout
Disk space utilization
Settings preference
Machine name and membership
TCP/IP properties
User accounts
Security identifiers
Action after deployment
Files to transfer
Application to run
Network utilization
Licensing
Target disk layout
Select the target disk for deployment. By default, the image will be deployed to the Disk 1 (0x80) in BIOS.
Deploy to:
Default disk
Disk number in BIOS: 2
When deploying a single volume:
Erase the target disk data and occupy disk space entirely
Replace volume: 1
Convert disk to GPT if target disk is larger than 2 TB
Conversion of a disk to the GPT format allows using the space beyond 2 TB. Clear this option if target machines do not support UEFI. Otherwise, the machines will not be bootable after deployment.
< Back
Next >
Cancel

Selecting the target disk and volume

If you selected a single volume (p. 83) for deployment, specify how to place that volume on the target disk:

- **Replace all volumes**: All existing volumes on the target disk will be deleted, and the entire disk space (including the currently unallocated space) will be available for the volume you are deploying.
- **Replace volume**: Only the volume with the selected number will be deleted. If the target disk contains only one volume, the entire disk space (including the currently unallocated space) will

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be available for the volume you are deploying. Otherwise, only the space that was occupied by the selected volume will be available for the volume you are deploying; currently unallocated space will remain unallocated.

Note: *The active volume of the target disk will remain active. Even if you deploy an active volume side by side with an already present active volume, the newly deployed volume will not become active. Therefore, you need to deploy an active volume to an active volume if you want to boot from the deployed volume.*

Tip: *To deploy a single volume to unallocated space or bare metal, first create a target volume of a desired size by using a third-party partitioning tool, such as Microsoft Disk Management or Acronis Disk Director.*

In either case, the size of the deployed volume will depend on the setting in **Disk space utilization** (p. 86).

The **When deploying a single volume** setting is not effective when you deploy multiple volumes. In this case, all existing volumes on the target disk are always deleted, and the entire disk space is available for the volumes.

Converting target disk to GPT

If you are deploying MBR disk or volume, specify if target disk should be converted to GPT when image is being deployed to machines with hard disk larger than 2TB.

The preset is: Convert disk to GPT if target disk is larger than 2TB

- **Convert disk to GPT if target disk is larger than 2TB**: MBR disks have size limitation of 2TB – if image of MBR disk will be deployed to target disk that is larger than 2TB, only first 2TB of disk capacity would be used. To get around this issue, Acronis Snap Deploy will automatically convert disk to GPT layout. However, in order to boot from GPT volume target machine must support UEFI architecture. If target machine does not support UEFI, uncheck this option to deploy the disk as MBR.

Convert disk to GPT if target disk is larger than 2TB option is available only when deploying MBR disk\volume with convertible OS. The following Microsoft Windows operating systems are convertible, that is, allow changing the boot mode from BIOS to UEFI and back:

- Windows Vista SP1 x64 and later.
- Windows Server 2008 x64 SP1 and later.
- Windows 7 x64.
- Windows Server 2008 R2 x64.

For volumes with other operating systems (and volumes without operating system at all) Convert disk to GPT if target disk is larger than 2TB option is not available, because Acronis Snap Deploy does not convert such volumes to GPT.

Disk space utilization

This setting determines whether to change the size of the volumes you are deploying according to the available space on the target disk. The available space depends on the size of the target disk and on whether you selected to replace all volumes or only a particular volume (see the **Target disk layout (p. 85)** setting).

The preset is: **Resize volumes to fit target disk**

The settings are the following:

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- **Resize volumes to fit target disk**: The software will proportionally extend or reduce each of the deployed volumes according to the available space on the target disk.

  The following examples assume that you have a 300-GB target disk that already contains two volumes: the first volume is 50 GB in size, and the second volume is 250 GB in size.

  Example 1. You are deploying a single 100-GB volume. In **Target disk layout**, you selected to replace all volumes on the target disk. In this case, the size of the deployed volume will be 300 GB.

  Example 2. You are deploying a single 100-GB volume. In **Target disk layout**, you selected to replace the second (250-GB) volume on the target disk. In this case, the size of the deployed volume will be 250 GB. The first volume on the target disk will remain intact.

  Example 3. You are deploying two 50-GB volumes. Because you are deploying more than one volume, all volumes on the target disk will be deleted; see “Target disk layout” (p. 85). Each of the deployed volumes will be 150 GB in size.

  Example 4. You are deploying a 10-GB volume and a 20-GB volume. All volumes on the target disk will be deleted. The deployed volumes will be 100 GB and 200 GB in size, respectively.

  Example 5. You are deploying a 1000-GB volume and a 2000-GB volume, both of which contain little data. All volumes on the target disk will be deleted. The deployed volumes will be 100 GB and 200 GB in size, respectively. If either volume contains too much data to be reduced to the respective size, the deployment will fail.
- **As in the master image**: Each deployed volume will have the same size as in the master image. Any excess available space on the target disk will become unallocated. If the target disk does not contain enough available space for placing the volumes, the deployment will fail.

Settings preference

The **Settings preference** setting determines whether individual deployment settings of a machine (p. 129) can override the deployment settings in the template.

When the **Settings preference** setting is enabled and you set up an individual setting for a machine, deployment to that machine will be performed with the individual setting, ignoring the corresponding setting in the template.

When the **Settings preference** setting is disabled, deployment to all machines will be performed with the settings in the template, ignoring any individual settings.

Machine name and membership

This setting determines the machine names, also known as NetBIOS names, of the target machines; it also determines the name of the workgroup or the Active Directory domain to which the target machines will be added after the deployment.

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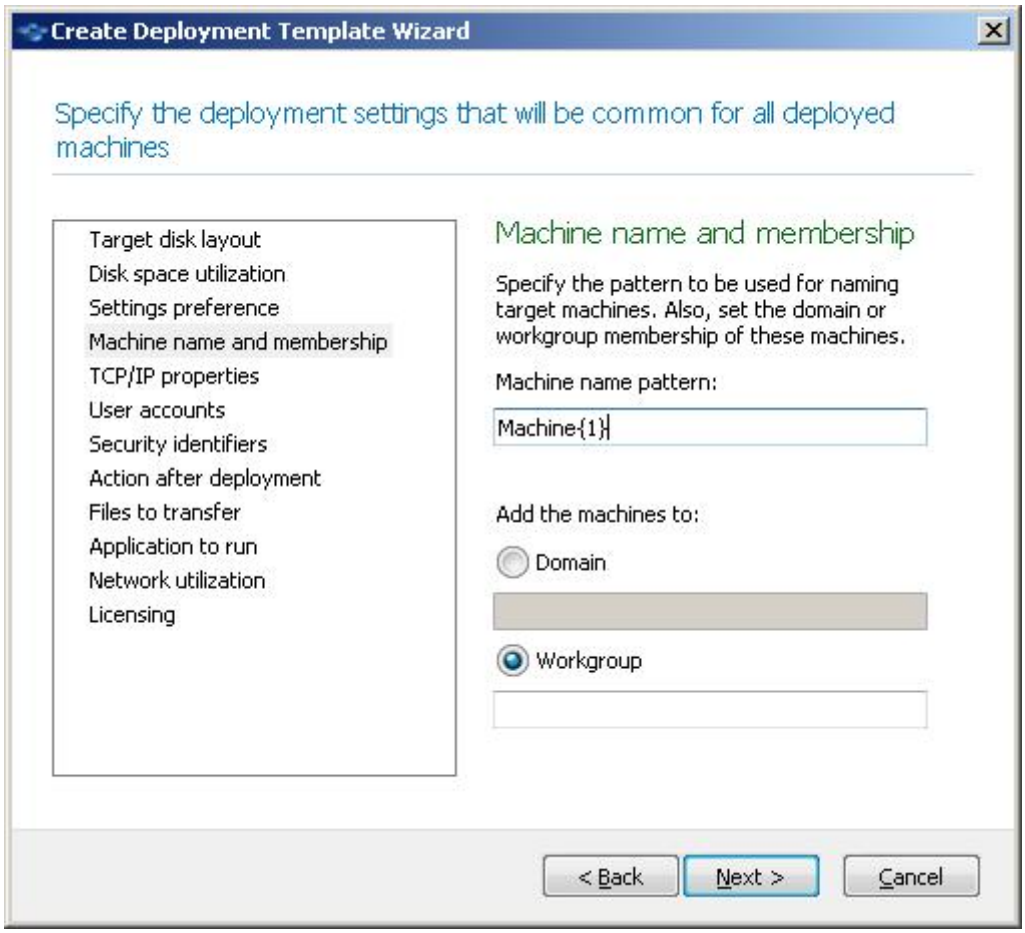
The preset is: The same name and membership as those of the machine in the master image



By default, all deployed machines will have the same name as the machine in the master image. Alternatively, you can specify a name pattern for the machines.

Specify whether the machine will be a member of a workgroup or an Active Directory domain. If you have selected the domain membership, specify the user name and password of a domain administrator.

Name patterns

A name pattern determines the names that the target machines will have after the deployment.

To specify a single name for all target machines, type that name in **Machine name pattern**. For example, type: **DeployedMachine**

To generate different names for the target machines, include either of the following wildcards or their combination.

{*start***}**

Generates consecutive numbers starting with *start*. Each machine name will have its unique number.

For example, the pattern **{1}** generates the names **1**, **2**, **3**, and so on up to the number of target machines. Similarly, the pattern **{5}** generates the names **5**, **6**, **7**, and so on.

It makes sense to use only one such wildcard in the pattern.

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{*start***,***count***}**

Generates *count* consecutive numbers starting with *start*.

For example, the pattern **{1,5}** generates the names **1**, **2**, **3**, **4**, and **5**. Similarly, the pattern **{8,5}** generates the names **8**, **9**, **10**, **11**, and **12**.

Make sure that the value of *count* is big enough. If the number of target machines exceeds *count*, deployment to the remaining machines will fail.

You can use two or more of these wildcards. See examples later in this section.

In the wildcards, the value of *start* must be 0 or greater. The value of *count* must be 1 or greater.

You can use the wildcards alone or accompany them with text, as in the following examples.

Examples

Machine{1}

This pattern generates the names **Machine1**, **Machine2**, …, **Machine***N*, where *N* is the number of target machines.

Name{1,3}

This pattern generates the names **Name1**, **Name2**, and **Name3**.

{1,3}{1,4}

This pattern generates the names **11**, **12**, **13**, **14**; **21**, **22**, **23**, **24**; **31**, **32**, **33**, and **34**

{1,9}{0,10}

This pattern generates 90 names: **10**, **11**, **12**, …, **19**; **20**, **21**, **22**, …, **29**; …; **90**, **91**, **92**, …, **99**

Machine{2,3}{5,4}

This pattern generates the names **Machine25**, **Machine26**, **Machine27**, **Machine28**, **Machine35**, **Machine36**, **Machine37**, **Machine38**, **Machine45**, **Machine46**, **Machine47**, **Machine48**

Name{0}{0,10}

This pattern generates the names **Name00**, **Name01**, …, **Name09**, **Name10**, **Name11**, **Name12**, …, **Name100**, **Name101**, and so on. Each machine will have a unique name.

Considerations when using name patterns

Patterns are most effective when you need to easily create different names for the target machines, no matter which machine gets which name. If you need to specify a particular name for a particular machine, you may want to use an individual deployment setting (p. 129) for that machine instead.

There is no order in which the names from the pattern are assigned to the machines. The same machine may be assigned a different name the next time you perform deployment.

TCP/IP properties

This setting determines the network settings for the target machines, such as the Internet Protocol (IP) addresses.

The preset is: The network settings of the master system

You have the options to:

- Use the network settings of the master system.

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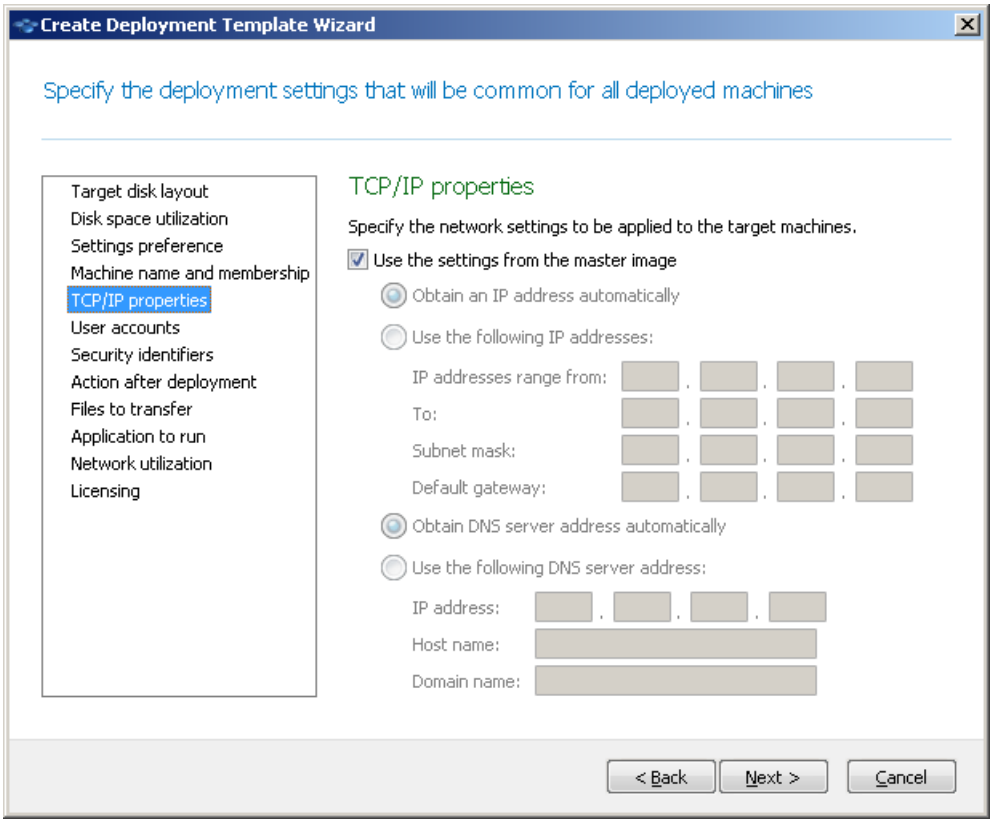
- Set up the target machines to obtain IP addresses automatically from a DHCP server.
- Specify a range of static IP addresses, a subnet mask, and a default gateway for the target machines. You may want to use this option if your network does not have the DHCP capability. Each machine will be assigned an IP address from the range. Make sure that the range is big enough. If there are more target machines than IP addresses in the range, deployment to the remaining machines will fail.



TCP/IP properties

If you have not selected to preserve the network settings of the master system settings, you can specify the DNS server. You can specify the IP address of the DNS server, such as 192.168.0.1; or the network name of the DNS server in **Host name** and **Domain name**, such as **dns** and **example.com** respectively if your DNS server is dns.example.com.

You will be able to change the network settings later when you start the operating system on the deployed machine.

User accounts

This setting determines the local user accounts that will be created on the target machines in addition to the accounts that exist in the master system.

Each user account can be added to the **Administrators**, **Power Users**, or **Users** group. Here you have an opportunity to add a unified administrator's account to all the systems, if needed. The **Remove** and **Remove all** buttons are provided to remove the accounts you specified.

The password complexity has to meet the password policy set for the master machine. To view or edit the password policy on the master machine:

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1. Click **Start -> Control Panel -> Administrative Tools -> Local Security Policy**.
2. Under **Account Policies**, click **Password Policy**.

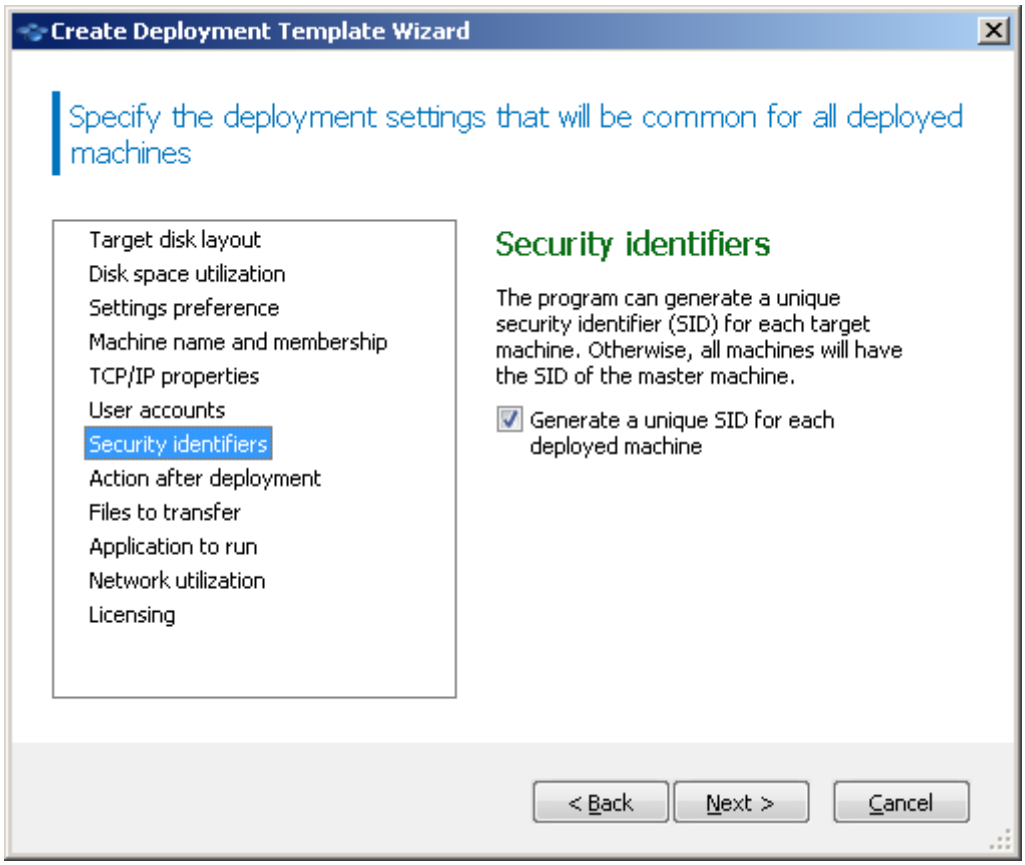
Security identifiers

This setting determines whether Acronis Snap Deploy 4 will generate unique security identifiers (SIDs) for the target machines.

The preset is: Generate a unique SID for each target machine

Generating unique SIDs should normally be enabled. We recommend not to change the SID only if you are deploying the image to the same machine from which the image was created.

You can keep the SID unchanged if there is no machine with the same SID in the same workgroup or domain. Such is the case when the master machine is no longer on the network.


Create Deployment Template Wizard
Specify the deployment settings that will be common for all deployed machines
Target disk layout
Disk space utilization
Settings preference
Machine name and membership
TCP/IP properties
User accounts
Security identifiers
Action after deployment
Files to transfer
Application to run
Network utilization
Licensing
Security identifiers
The program can generate a unique security identifier (SID) for each target machine. Otherwise, all machines will have the SID of the master machine.
Generate a unique SID for each deployed machine
< Back
Next >
Cancel

Note: *SID will not be changed if master image contains a server with Domain Controller role enabled: Domain Controller server stores domain SID which should be the same on all domain machines and therefore is not supposed to be altered.*

Action after deployment

This setting determines what to do with the target machines after the deployment is complete.

The preset is: **Shut down**

Choose whether to shut down or restart the target machine after the deployment and all associated operations, such as transferring files (p. 92), are completed.

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Files to transfer

This setting determines the list of files, such as installation files, to be transferred to all target machines after the deployment.

Each file must be located in a network folder. When adding the file, specify the credentials to the network folder.

The destination of each file must be on one of the volumes you are deploying.

To run the file after it is transferred, select the **Run the file on target machines** check box. The file will run when Windows first starts on the target machine.

Example

You want the target machines to use a particular Plug and Play device driver, such as a video adapter driver, so that Windows automatically recognizes the device at boot. In this case, do the following:

1. Create a network folder, such as \\server\share, and place the driver files to it. Driver files usually include an .inf file and a .sys file.
2. Specify both files in the **Files to transfer** setting, with the following paths in the **Destination** field:
   - For the .inf file: **C:\Windows\inf**
   - For the .sys file: **C:\Windows\System32\drivers**

   If the operating system in the master image resides on a different volume, change the drive letter in these paths accordingly.

During the deployment, the files are placed in the corresponding folders. When starting on the target machine, Windows discovers the new device and finds your driver for it.

Applications to run

This setting determines the applications, such as service applications, that will run on the target machines after the deployment is complete.

To add an application, click **Add**, and then specify the path to the application and the parameters the application will run with.

The application must be located on one of the volumes you are deploying.

The application will run when Windows first starts on the target machine.

Network utilization

This setting determines the data transfer mode for the deployment.

The preset is: **Multicast**

With the **Multicast** transfer mode, Acronis Snap Deploy 4 OS Deploy Server sends data to a group of recipients simultaneously.

When the **Switch to unicast if multicast fails during deployment** check box is selected, the deployment server will automatically switch to using the unicast transfer mode if the network hardware, such as a router, does not allow multicasting or limits the distribution of multicast packets across the network. Switching to unicast may take up to one minute. After switching to unicast, the deployment server continues deployment.

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Using the **Unicast** transfer mode, the server sends a copy of the data to each recipient. This can significantly reduce the deployment speed.

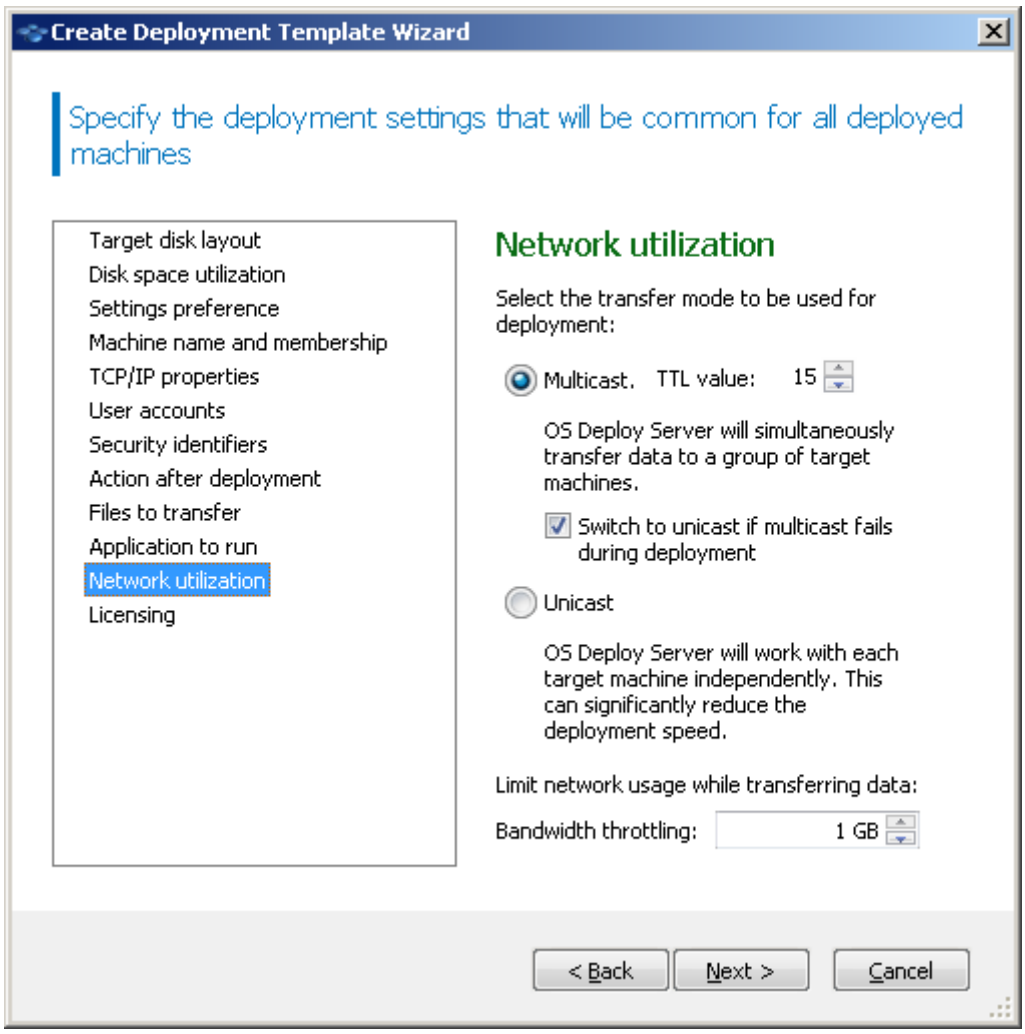
For example, suppose that you have a bandwidth of 100 MB per second, and you want to deploy a system to 10 target machines.

- With the **Unicast** mode, the server divides the speed among 10 machines. Therefore, the data transfer speed will be 10 MB per second for each target machine.
- With the **Multicast** mode, the server sends one copy of data to a multicast address, and each client will receive data at a speed of 100 MB per second.

Multicast configuration has a parameter that specifies the time to live (TTL) for multicast packets. Use this parameter to limit multicast packets distribution via gateways.

The default value is 15. In practice, this enables the packets to pass up to 15 hops which may be treated as an unlimited distance. The minimal value 1 will limit the packets circulation to one subnet.

By setting the permitted bandwidth, you can limit the network usage during deployment. The default value is 1 gigabit (Gbit) per second.


Create Deployment Template Wizard
Specify the deployment settings that will be common for all deployed machines
Target disk layout
Disk space utilization
Settings preference
Machine name and membership
TCP/IP properties
User accounts
Security identifiers
Action after deployment
Files to transfer
Application to run
Network utilization
Licensing
Network utilization
Select the transfer mode to be used for deployment:
Multicast. TTL value: 15
OS Deploy Server will simultaneously transfer data to a group of target machines.
Switch to unicast if multicast fails during deployment
Unicast
OS Deploy Server will work with each target machine independently. This can significantly reduce the deployment speed.
Limit network usage while transferring data:
Bandwidth throttling: 1 GB
< Back
Next >
Cancel

Adjusting network utilization settings

Acronis Snap Deploy 4 uses Internet Group Management Protocol (IGMP) for multicasting. Therefore, all network hardware (such as routers or network switches) must be IGMP-capable and correctly

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configured. The specific information on configuring any particular router or network switch is usually available in the documentation provided with the hardware.

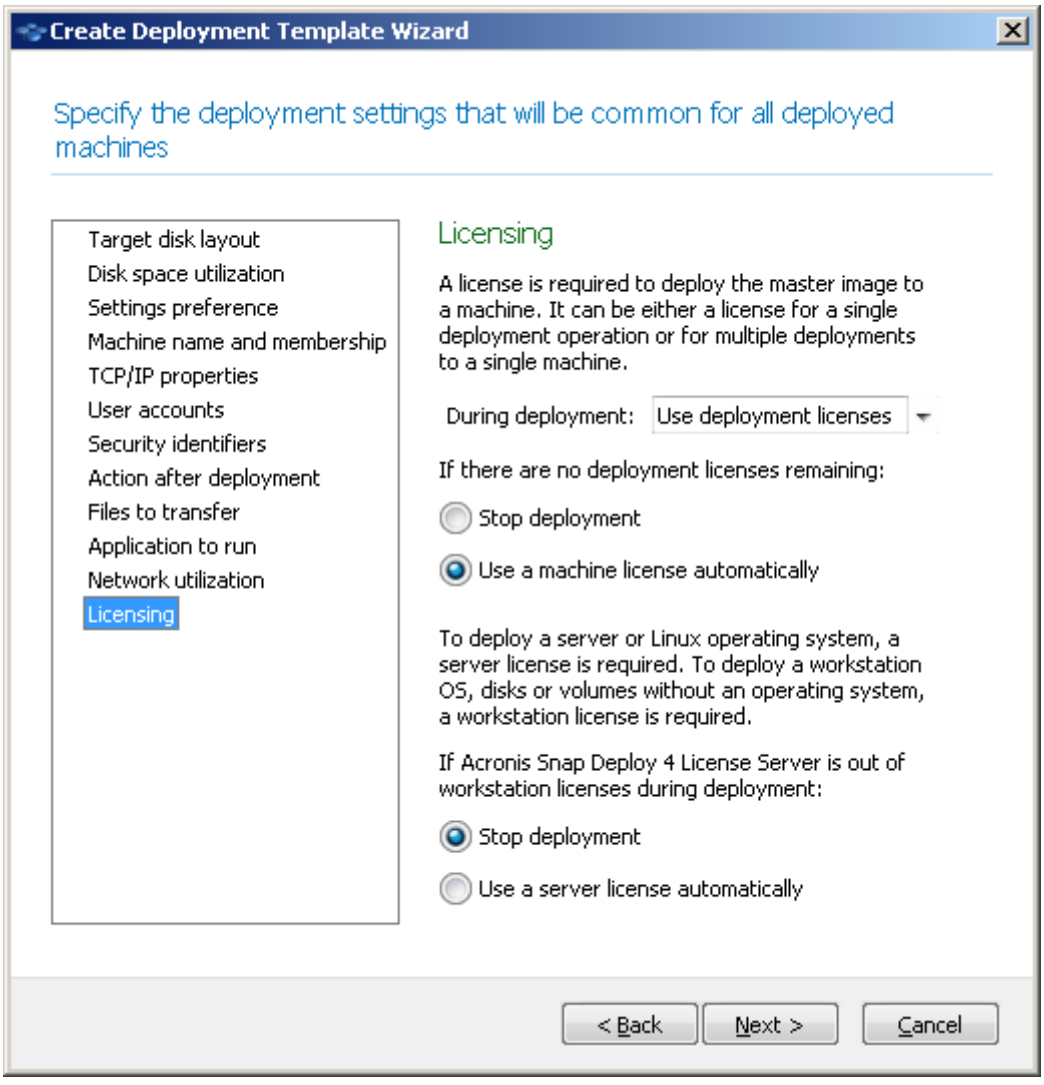
If there is no IGMP-capable hardware (or you cannot configure it correctly) in the network, use the Unicast data transfer mode.

Licensing

This setting determines which type of license to use for deployment to a target machine and what to do when no appropriate license is available on the license server.

The preset is:

- Use a deployment license of the corresponding type (a server license or a workstation license)
- If no such deployment license is found, use a machine license of the same type
- Stop deployment otherwise


Create Deployment Template Wizard
Specify the deployment settings that will be common for all deployed machines
Target disk layout
Disk space utilization
Settings preference
Machine name and membership
TCP/IP properties
User accounts
Security identifiers
Action after deployment
Files to transfer
Application to run
Network utilization
Licensing
Licensing
A license is required to deploy the master image to a machine. It can be either a license for a single deployment operation or for multiple deployments to a single machine.
During deployment:
Use deployment licenses
If there are no deployment licenses remaining:
Stop deployment
Use a machine license automatically
To deploy a server or Linux operating system, a server license is required. To deploy a workstation OS, disks or volumes without an operating system, a workstation license is required.
If Acronis Snap Deploy 4 License Server is out of workstation licenses during deployment:
Stop deployment
Use a server license automatically
< Back
Next >
Cancel

Specifying licensing settings

Based on your selection, the software will use a deployment license (which enables a single successful deployment) or a machine license (which enables an unlimited number of deployments to

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a machine). Based on the operating system you are deploying, a workstation license or a server license will be used.

If no appropriate license is available on the license server, the software can either stop deployment to the machine, or use an alternative license.

Tip: *To force a machine license to be used for a particular machine, you can specify the* ***Licensing*** *setting as an individual setting (p. 129) for that machine.*

When you deploy a workstation operating system (p. 15) and you selected the **Use a server license automatically** option, the software will use a server license if no workstation license can be used.

The **Licensing** setting also applies to the Acronis Universal Deploy licenses independently from the main licenses. For example, if a workstation license for performing deployment is found, but a workstation license for applying Acronis Universal Deploy is not, Acronis Snap Deploy 4 may use a server license for Acronis Universal Deploy, but still use a workstation license for performing deployment.

Example

Suppose that you are deploying a workstation operating system. Consider the following settings:

- During deployment: **Use deployment licenses**
- If there are no deployment licenses: **Use a machine license automatically**
- If the license server is out of workstation licenses: **Use a server license automatically**

With these settings, the software will use a license based on the following priority:

a) Deployment workstation license
b) Machine workstation license
c) Deployment server license
d) Machine server license

If you change the second setting from **Use a machine license automatically** to **Stop deployment**, the software will use only deployment licenses. The software will use the following priority:

a) Deployment workstation license
b) Deployment server license

10.3.1.4 Using Acronis Universal Deploy

Specify whether you want to use Acronis Universal Deploy during deployment.

Acronis Universal Deploy is an add-on to Acronis Snap Deploy 4. It requires a separate license.

Skip this section if either of the following is true:

- You do not have a license for Acronis Universal Deploy.
- You want to deploy an image that does not contain Windows.

To configure this setting:

1. Select whether to use Acronis Universal Deploy.

   Acronis Universal Deploy will help you to create a bootable Windows clone on different hardware by automatically installing the necessary system drivers. Use Acronis Universal Deploy when deploying Windows to a machine with a dissimilar processor, different motherboard or

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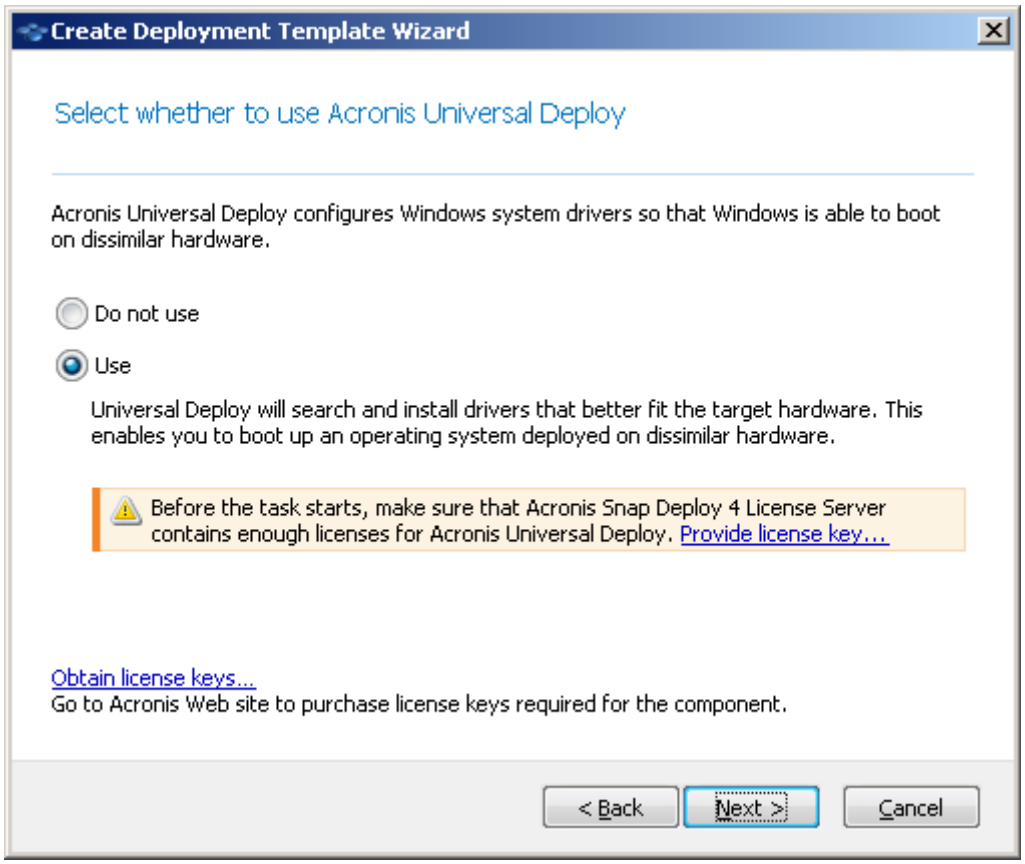
other mass-storage device than in the imaged system. For detailed information, see “What is Acronis Universal Deploy” (p. 26).


Create Deployment Template Wizard
Select whether to use Acronis Universal Deploy
Acronis Universal Deploy configures Windows system drivers so that Windows is able to boot on dissimilar hardware.
Do not use
Use
Universal Deploy will search and install drivers that better fit the target hardware. This enables you to boot up an operating system deployed on dissimilar hardware.
Before the task starts, make sure that Acronis Snap Deploy 4 License Server contains enough licenses for Acronis Universal Deploy. Provide license key...
Obtain license keys...
Go to Acronis Web site to purchase license keys required for the component.
< Back
Next >
Cancel

Select whether to use Acronis Universal Deploy

Acronis Universal Deploy uses three sources for drivers:

- The Windows default driver storage folder (in the master image being deployed)
- The driver repository, which is one or more network folders or removable media
- The mass-storage device driver specified by the user

The software will find the most suitable drivers of all available drivers and install them into the deployed system. However, the driver defined by the user will have the priority. It will be installed, with appropriate warnings, even if the software finds a better driver.

2. [Optional] Specify the driver repository.

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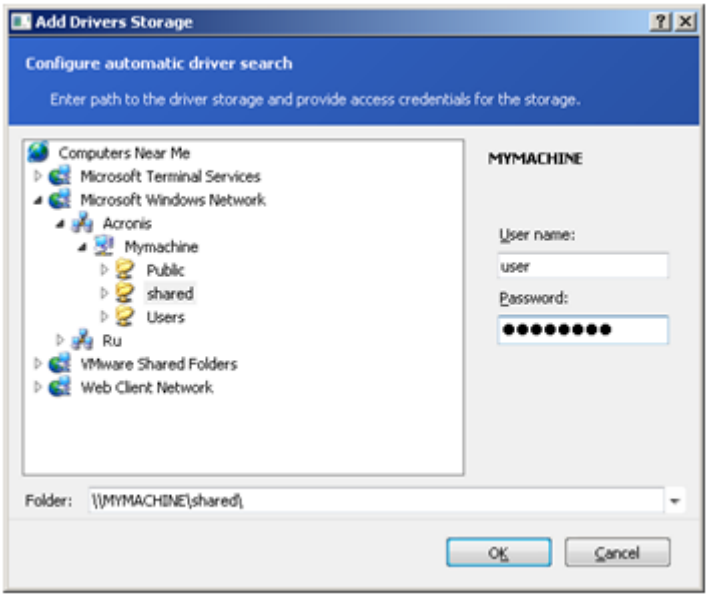
Specify a driver storage to search for HAL and storage device drivers during the automatic search-and-install procedure. You can add network locations and enable a search of removable media for drivers.



Adding a driver storage

3. [Optional] Specify the mass-storage driver.

   If the target hardware has a specific mass-storage controller (such as a SCSI, RAID, or Fibre Channel adapter) for the hard disk, explicitly specify the appropriate driver for that controller. The driver will be installed in any case, bypassing the automatic driver search-and-install procedure.

   Use this option only if the automatic search-and-install procedure was unsuccessful.

Tip: *When deploying the system to a virtual machine that uses SCSI hard drive controller, make sure to specify SCSI drivers for the virtual environment. For example, VMware requires Buslogic or LSI logic drivers. Use drivers bundled with your virtualization software or download the latest driver versions from the software manufacturer's Web site.*

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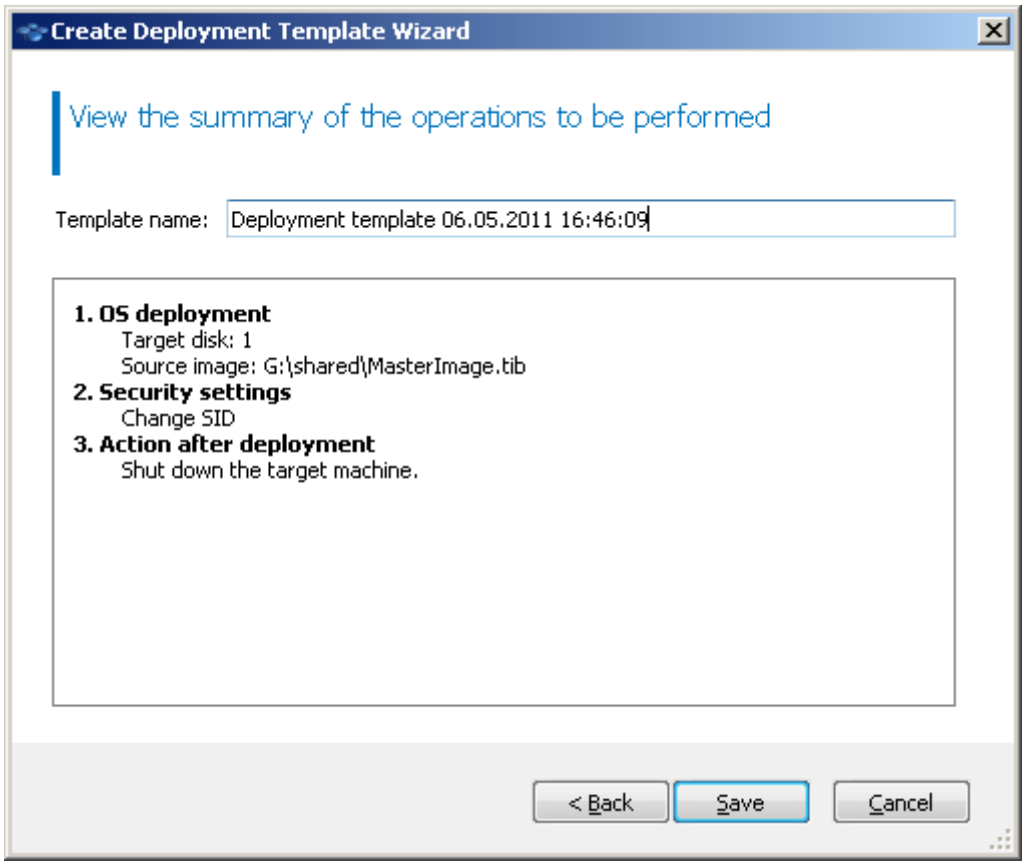
10.3.1.5 Summary window

Check your settings in the summary window, and then click **Save**.



The summary window

10.3.2 Configuring default deployment settings

In the **Default Deployment Settings** window, you can specify the values that will be used by default when you create a deployment template (p. 80).

To view or change the default deployment settings

1. Start Acronis Snap Deploy 4 Management Console.
2. On the **Tools** menu, click **Configure default settings**. If prompted, specify the name or IP address of the machine where Acronis Snap Deploy 4 OS Deploy Server is installed, and the user name and password of an administrator on that machine.

Each default setting has a preset value. To reset all default settings to their preset values, click **Reset all**.

List of default settings

The following is the list of default deployment settings and their preset values.

- **Target disk layout** (p. 85)

  The preset is: Perform deployment to the first hard disk in the BIOS
- **Disk space utilization** (p. 86)

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The preset is: Extend or reduce the volumes being deployed, according to the available space on the target disk

- **Machine name and membership** (p. 87)

  The preset is: The same as of the master system
- **TCP/IP properties** (p. 89)

  The preset is: The network settings of the master system
- **User accounts** (p. 90)

  The preset is: Create no additional user accounts
- **Security identifiers** (p. 91)

  The preset is: Generate a unique security identifier (SID) for each target machine
- **Action after deployment** (p. 91)

  The preset is: Shut down the machine after the deployment
- **Network utilization** (p. 92)

  The preset is:
  - Perform deployment by using multicast
  - Switch to unicast if multicast fails
- **Licensing** (p. 94)

  The preset is:
  - Use a deployment license of the corresponding type (a server license or a workstation license)
  - If no such deployment license is found, use a machine license of the same type
  - Stop deployment otherwise

10.3.3 Managing deployment templates

In the **Templates** window, you can create, view, edit, and delete the deployment templates that are saved on Acronis Snap Deploy 4 OS Deploy Server.

To open this window, click **Actions -> Manage templates**. If prompted, specify the name or IP address of the machine with the deployment server, and the user name and password of an administrator on that machine.

To create a deployment template

1. Connect the management console to Acronis Snap Deploy 4 OS Deploy Server.
2. On the **Actions** menu, click **Manage templates**.
3. Click **Create new**, and then follow the steps of the Create Deployment Template Wizard (p. 80).

10.4 Deployment through a deployment task

By using a deployment task, you can perform deployment in either of these ways:

- Deployment to a specified list of machines (p. 100). Acronis Snap Deploy 4 will use the Wake-on-LAN functionality to wake up the machines that are turned off and thus are not ready for deployment.
- Deployment as soon as a specified number of any machines become ready for deployment (p. 106). You (or users in your organization) will need to make the machines ready.

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A machine becomes ready for deployment after it boots to Acronis Snap Deploy 4 Agent from a bootable media or a PXE server, and then connects to Acronis Snap Deploy 4 OS Deploy Server.

In addition, you can run any deployment task manually from the **Deployment tasks** view (p. 131).

A deployment task runs according to a deployment template (p. 80). When creating the task, you can create a deployment template or specify an existing one.

10.4.1 Prerequisites

Before proceeding with the deployment, make sure that:

- You have installed the following components: Acronis Snap Deploy 4 Management Console, Acronis Snap Deploy 4 License Server, Acronis Snap Deploy 4 OS Deploy Server, and (optionally) Acronis PXE Server. All these components are already installed if you performed a typical installation (p. 40).
- You imported a sufficient number of licenses (p. 16) to Acronis Snap Deploy 4 License Server.
- You created a master image by using either bootable media (offline imaging (p. 68)) or Acronis Snap Deploy 4 Management Agent (online imaging (p. 68)).

Procedures in this section assume that you have performed these steps.

10.4.2 Deployment to specific machines

Deployment to a specified list of machines can run immediately, manually, or on a schedule.

When the deployment is about to start, the software uses the Wake-on-LAN (WOL) functionality of the BIOS to wake up (turn on) the machines in the list.

Acronis Snap Deploy 4 wakes up each machine by sending a special packet, called the *magic packet*, to all network adapters of the machine.

Machines in another subnet can be woken up through the Acronis Wake-on-LAN Proxy component, which is delivered with Acronis Snap Deploy 4.

The woken up machines then boot into Acronis Snap Deploy 4 Agent.

You can manually boot machines that do not support Wake-on-LAN, before the task starts. Such machines will also be deployed, provided that they are listed for deployment.

A best practice for this type of deployment is to use Acronis PXE Server for booting the machines. Alternatively, you can boot the machines by using a bootable media.

10.4.2.1 Preparation steps

This section describes how to prepare deployment to a specified list of machines.

Getting MAC addresses

Media Access Control address (MAC address) is a 48-bit physical (hardware) address of a network device. In Windows, the physical address can be obtained by running the command `ipconfig /all` or by selecting **Local Area Connection -> Status -> Support -> Details** (in Windows 7, you can access this option from the Network and Sharing Center).

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MAC addresses for bare metal are usually supplied by the hardware manufacturer. You can get the MAC address of any PC-compatible hardware by entering the network configuration menu of any Acronis bootable component, such as Acronis Snap Deploy 4 Master Image Creator.

An administrator can execute a script that collects the MAC addresses of all machines on the network and saves the MAC addresses to a text file. This can be a plain text file, such as the following:

```
00-01-23-45-67-1A
02-01-23-45-67-1B
```

You can then specify this file when creating the deployment task or in the **Machines** view when adding machines (p. 126).

You also will be able to provide each MAC address manually.

Enabling Wake-on-LAN on target machines

Make sure that Wake-on-LAN is enabled on the target machines. Enter the machine BIOS and set **Power -> Wake On PCI PME -> Power On**. The exact names might vary depending on the BIOS version.

To enable the Wake-on-LAN feature on a machine running Windows, set the network adapter (NIC) properties on the machine as follows:

Select **Control Panel -> System -> Device Manager -> Network adapters ->** select the network adapter **-> Properties -> Advanced**:

- **Enable PME -> Enabled**
- **Wake On Link Settings -> OS Controlled**
- **Wake On Settings -> Wake On Magic Packet**

The exact names of the controls may differ depending on your operating system.

If you cannot or do not wish to use Wake-on-LAN on some or all of the target machines, you will have to boot them into Acronis Snap Deploy 4 Agent manually (p. 107) before the scheduled time comes.

Installing and configuring the PXE server

For the machines to automatically boot over the network into Acronis Snap Deploy 4 Agent when the scheduled time comes, do the following:

1. Install Acronis PXE Server. If you performed a typical installation (p. 40), the PXE server is already installed together with Acronis Snap Deploy 4 OS Deploy Server.

   Tip: *If all of the target machines are located in one subnet, but Acronis Snap Deploy 4 OS Deploy Server is installed in a different subnet, we recommend installing a separate PXE server in the target machines' subnet. For details, see "Deployment in another subnet" (p. 105).*

2. Connect the management console to the PXE server.
3. Do one of the following, as described in "Configuring Acronis PXE Server" (p. 65):
   - Upload Acronis Snap Deploy 4 Agent to the PXE server by clicking **Upload components**.
   - Upload a Preinstallation Environment (PE) image to the PXE server by clicking **Upload PE image to PXE**. For information about creating a PE image (a WIM file), see "Creating a bootable media based on WinPE 2.x or 3.0" (p. 63).

   When uploading the agent or the PE image:

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- Set **Start operating system** as the default boot menu option.
- Set up a reasonable time-out so that the operating system can start automatically. You can leave the default setting for the time-out.

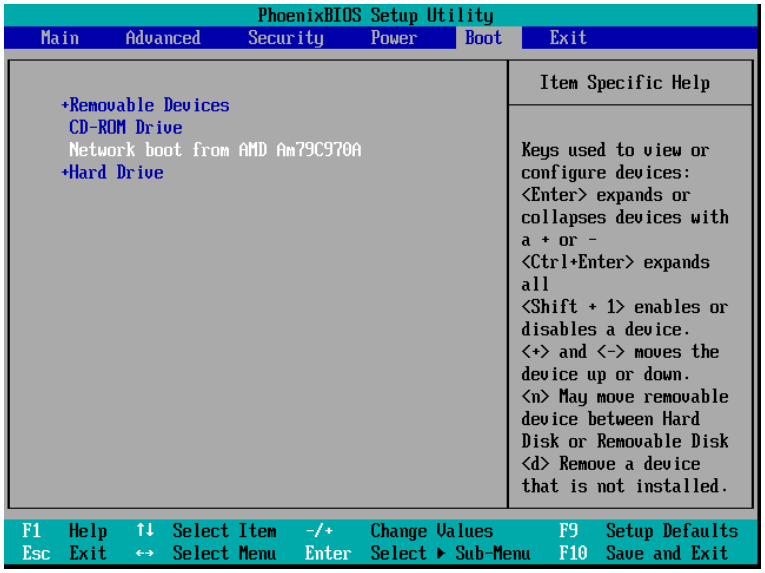
Without a PXE server, you will need to boot the target machines manually (p. 107) before the deployment task starts.

Setting up a machine to boot from PXE

For bare metal, it is enough that the machine BIOS configuration supports network booting. This is because no operating system is present on the hard disk, so the machine will boot from the network even if the hard disk drive is the first device in the boot sequence.

On a machine that already has an operating system on the hard disk, the BIOS must be configured so that the network adapter is either the first boot device, or at least precedes the Hard Drive device in the boot sequence.

The following example shows one of the reasonable BIOS configurations. Unless you insert a bootable media, the machine will boot from the network.


PhoenixBIOS Setup Utility
Main
Advanced
Security
Power
Boot
Exit
+Removable Devices
CD-ROM Drive
Network boot from AMD Am79C970A
+Hard Drive
Item Specific Help
Keys used to view or configure devices:
<Enter> expands or collapses devices with a + or -
<Ctrl+Enter> expands all
<Shift + 1> enables or disables a device.
<+> and <-> moves the device up or down.
<n> May move removable device between Hard Disk or Removable Disk
<d> Remove a device that is not installed.
F1 Help ↑↓ Select Item -/+ Change Values F9 Setup Defaults
Esc Exit ↔ Select Menu Enter Select ▸ Sub-Menu F10 Save and Exit

Example of setting up the BIOS for network booting

In some BIOS versions, you have to save changes to BIOS after enabling the network adapter so that the network adapter appears in the list of boot devices.

If the hardware has multiple network adapters, make sure that the network adapter supported by the BIOS has the network cable plugged in.

10.4.2.2 Creating the deployment task

When the deployment is about to start, Acronis Snap Deploy 4 OS Deploy Server wakes up the target machines in the list you specify.

The target machines turn on, boot into Acronis Snap Deploy 4 Agent from Acronis PXE Server, and connect to the deployment server. When all (or some, depending on your choice) target machines connect, the deployment server starts deployment. Deployment is usually performed by multicasting.

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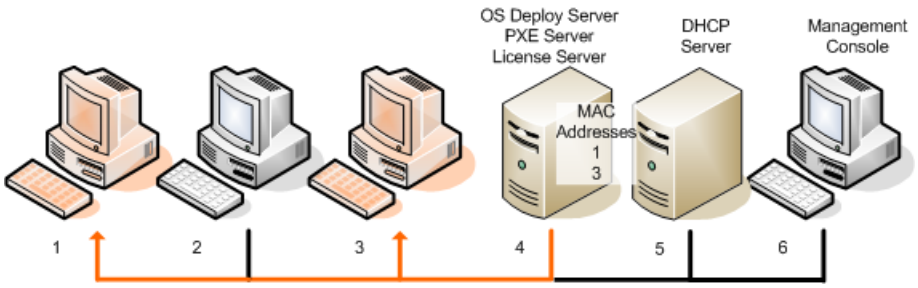
The following picture illustrates deployment to specific machines within a single subnet. If the target machines are located in another subnet, you may need to perform additional steps (p. 105) before creating the deployment task.



Deployment to specific machines within one subnet

To create a deployment task for specific machines

1. Make sure that you have completed the preparation steps (p. 100).
2. Start Acronis Snap Deploy 4 Management Console.
3. In the welcome screen, click **Deploy image**. If prompted, specify the machine where Acronis Snap Deploy 4 OS Deploy server is installed.
4. In **Deploy to**, select **The machines listed below**.
5. Select **Add machines -> From file**, and then specify the file with the MAC addresses you created.

   You can also specify the MAC addresses manually (select **Add machines -> By MAC address**) or select machines that are currently listed in the **Machines** view (select **Add machines -> From machine list**).
6. Tune the PXE server as follows:
   a. Select the **Use PXE server for booting into agent** check box, and then click **Specify**.
   b. Specify the name or the IP address of the machine with the PXE server, and the user name and password of an administrator on that machine.

   Tuning the PXE server ensures that the machines in your list boot into Acronis Snap Deploy 4 Agent when the task starts (even though you selected **Start operating system** (p. 101) as the default boot menu option), and boot to the operating system after the task finishes.

   Machines that are not in your list are not affected: they boot according to the default boot menu option.

   The PXE server remains tuned until the task finishes. It becomes tuned again the next time the task starts.

   Note when using WinPE: *Tuning the PXE server is not effective if you uploaded the bootable components to the PXE server directly (using the* ***Acronis PXE Server*** *setting) when creating a WinPE-based bootable media (p. 63). This is because choosing a default boot menu option is not available in this case. You need to create a PE image first (using the* ***WIM image*** *setting), and then upload the PE image to the PXE server (p. 65).*
7. If the machines are located in a different subnet than the deployment server (p. 105), specify the Wake-on-LAN proxy installed in that subnet, as follows:
   a. Expand **Show Wake-on-LAN Proxy settings**, and then click **Specify**.
   b. Specify the name or the IP address of the machine with Acronis Wake-on-LAN Proxy, and the user name and password of an administrator on that machine.
8. Click **Next**.
9. Create a deployment template (p. 80) or select an existing one.

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10. Specify when to run the task (set up the deployment schedule):
    - **Now**: The task will run immediately after you create it.
    - **Once later**: The task will run once at the specified date and time.
    - **Daily**: The task will run at the selected times every day or every few days.
    - **Weekly**: The task will run on the selected days every week or every few weeks.
    - **Monthly**: The task will run on the selected day every month.
    - **Manually**: The task will run only when you start it manually.

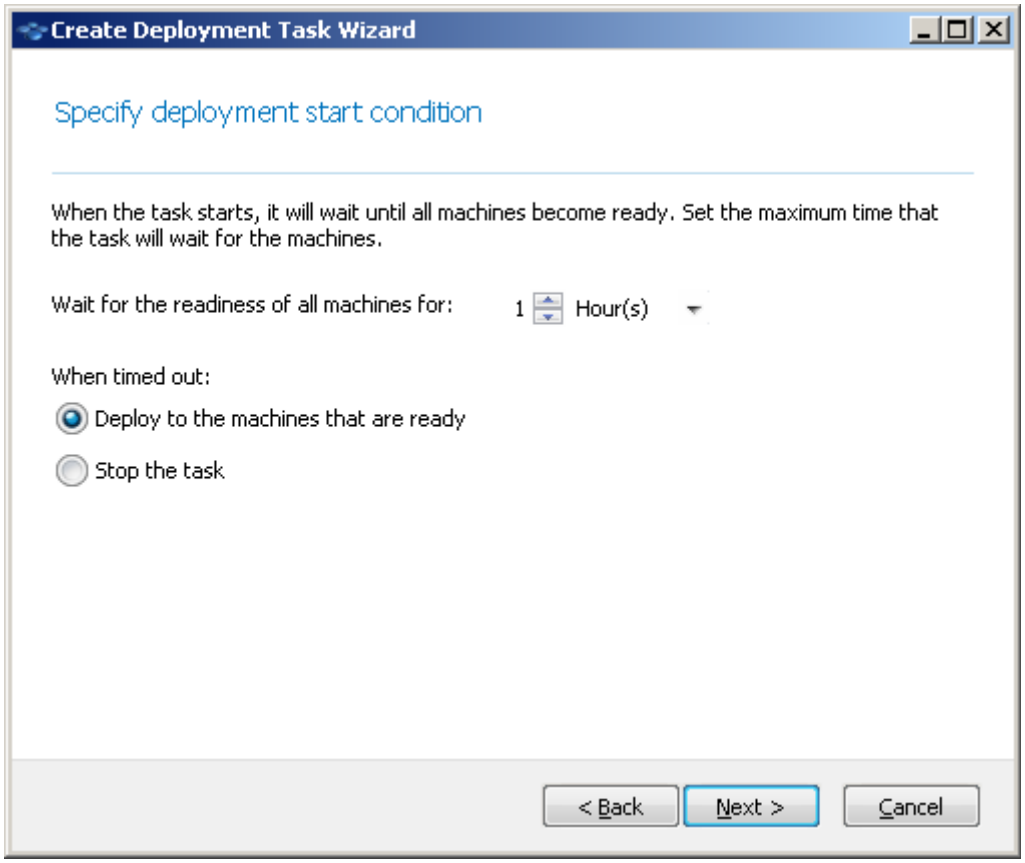
    If prompted, specify the credentials for running the task.

    Important: *Make sure that the target machines are turned off or booted into Acronis Snap Deploy 4 Agent when the scheduled time comes.*

    With any deployment schedule, you will be able to start the task manually by selecting it in the **Deployment tasks** view (p. 131) and clicking **Run** on the toolbar.
11. Specify a time-out for waiting for all listed machines to become ready, and the action after the time-out.

    In practical situations, some of the listed machines might not connect to the deployment server at the scheduled time. For example, they may be in use at that time. The task waits for listed machines to become ready for the time you specified. As soon as all machines are ready, the task starts deployment.

    If not all machines are ready after the time-out, the task can:
    - Perform deployment to the machines that are currently ready.
    - Stop without performing deployment to any machine. The task will start at its next scheduled time and will again begin waiting for the readiness of all machines.


Create Deployment Task Wizard
Specify deployment start condition
When the task starts, it will wait until all machines become ready. Set the maximum time that the task will wait for the machines.
Wait for the readiness of all machines for:
1
Hour(s)
When timed out:
Deploy to the machines that are ready
Stop the task
< Back
Next >
Cancel

Start condition for deployment

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12. Review the task summary, and then click **Create** to create and save the task.

The task appears in the **Deployment tasks** view. When the task is started, the connected machines' IP addresses and the task progress are displayed in that view.

When the task is finished, its log entries will be available in the log of the deployment server.

10.4.2.3 Deployment in another subnet

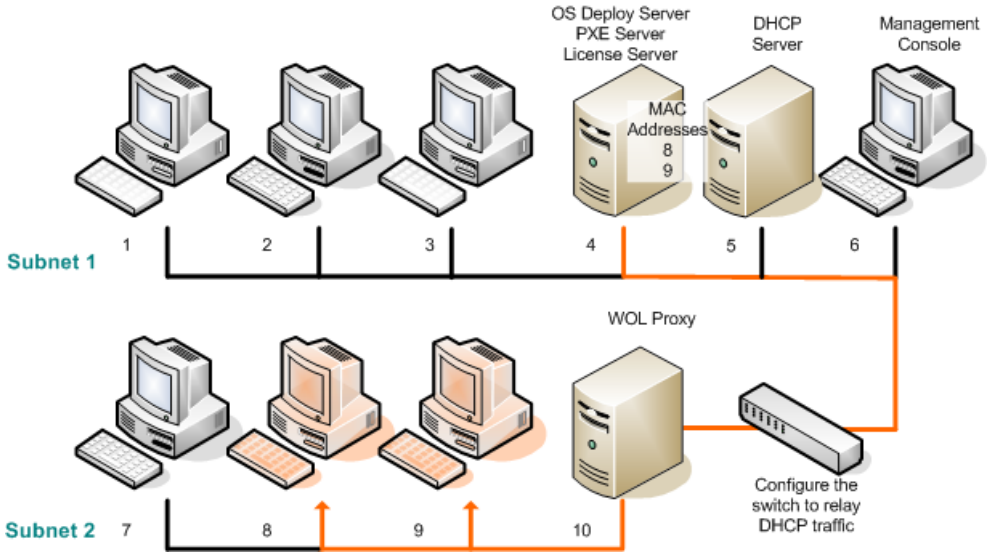
Machines in another subnet (behind a network switch or router) can be woken up through the Acronis Wake-on-LAN Proxy component.

If Acronis Snap Deploy 4 OS Deploy Server is installed in one subnet (Subnet 1) and the target machines in another subnet (Subnet 2), prepare deployment as follows:

1. Install Acronis Wake-on-LAN Proxy in Subnet 2.
2. Prepare Acronis PXE Server in either of these ways:
   - Install the PXE server in Subnet 2 and configure that PXE server. This way, only machines in Subnet 2 can boot to the PXE server.

   OR

   - Install the PXE server in Subnet 1. Enable this PXE server to also work in Subnet 2 by configuring the network switch to relay the PXE traffic. The PXE server's IP addresses are configured on a per-interface basis using IP helper functionality in the same way as DHCP server addresses. For more information, see http://support.microsoft.com/default.aspx/kb/257579. This way, machines from both subnets can boot to this PXE server.



Deployment in another subnet by using Acronis Wake-on-LAN Proxy. The network switch is configured to relay the PXE traffic and DHCP traffic.

3. Create the deployment task (p. 102). When creating the deployment task, specify the Wake-on-LAN proxy and specify the PXE server that you prepared in the previous step.

Note: *If your router also acts as a Network Address Translation (NAT) device, see also "Deployment behind an NAT device" (p. 111).*

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10.4.3 Deployment to any ready machines

Deployment to any ready machines starts when a specified number of machines becomes ready. Acronis Snap Deploy 4 OS Deploy Server counts how many machines have connected to it, and starts deployment when a specified number of machines is reached. Deployment is usually performed by multicasting.

You can specify a time-out period. After the time-out, deployment will start anyway on the machines that will be ready at that moment.

This way of deployment decouples configuring the deployment operation from booting the target machines. You configure the deployment first, no matter whether the target machines are ready or not, and then boot the machines. The operation will start as soon as the target machines are ready or (optionally) on a time-out.

To create a deployment task for any ready machines

1. Do one of the following:
   - Create a bootable media (p. 58) with Acronis Snap Deploy 4 Agent.

   OR

   - Connect the management console to Acronis PXE server and upload Acronis Snap Deploy 4 Agent (p. 65).
2. Start Acronis Snap Deploy 4 Management Console.
3. In the welcome screen, click **Deploy image**. If prompted, specify the machine where Acronis Snap Deploy 4 OS Deploy server is installed.
4. **In Deploy the image to**, select **Any machines ready for deployment**.
5. Select the condition that triggers the deployment:
   - Specify the number of machines that you need to deploy; for example, 70 machines.
   - Choose whether you want the deployment to start anyway after a time-out.

     If you do not specify a time-out (clear the **Deploy anyway after** check box), the deployment server will wait until any 70 machines boot into Acronis Snap Deploy 4 Agent and connect to the deployment server.

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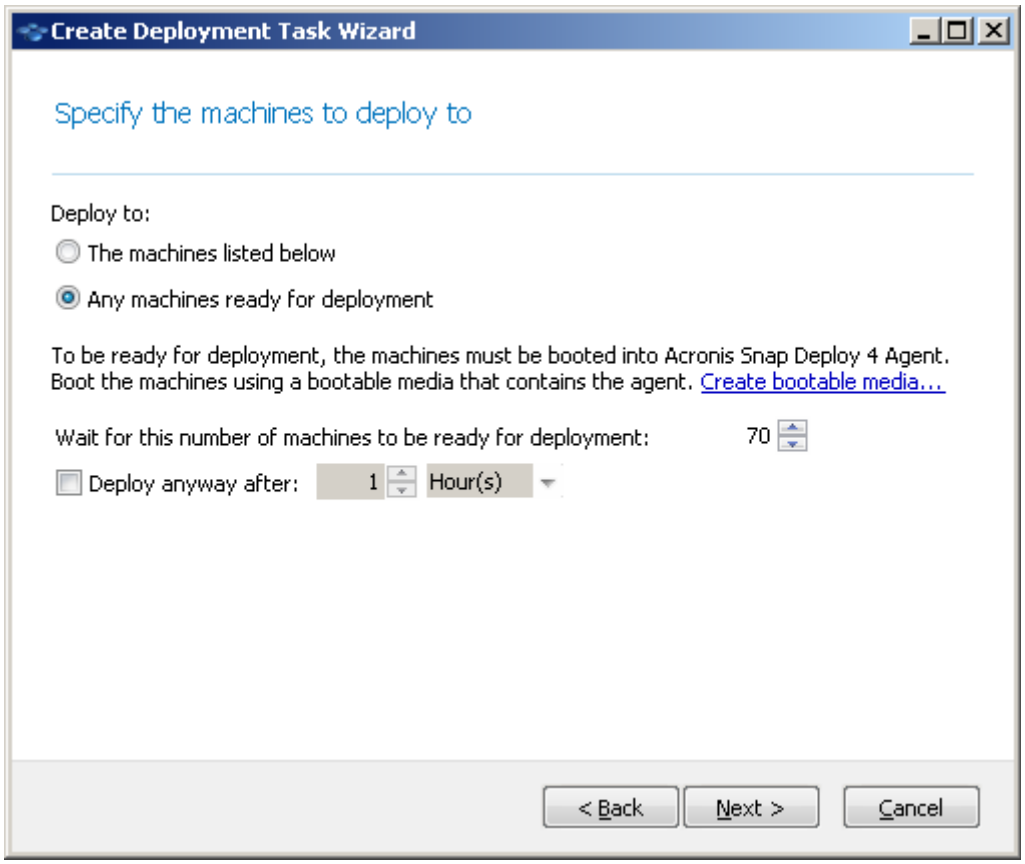
If you specify a time-out, the deployment will start either when any 70 machines connect, or when the time runs out and at least one machine is connected. If no machine is connected, the task will stop.


Create Deployment Task Wizard
Specify the machines to deploy to
Deploy to:
The machines listed below
Any machines ready for deployment
To be ready for deployment, the machines must be booted into Acronis Snap Deploy 4 Agent.
Boot the machines using a bootable media that contains the agent. Create bootable media...
Wait for this number of machines to be ready for deployment: 70
Deploy anyway after: 1 Hour(s)
< Back
Next >
Cancel

Triggering conditions for the deployment

6. Click **Next**.
7. Create a deployment template (p. 80) or select an existing one.
8. Review the deployment operation summary and click **Create** to create and save the deployment task. You can see the task in the **Deployment tasks** view. The task will be in the **Waiting for machines** state until the specified number of machines is connected.
9. Boot the target machines (p. 107) into Acronis Snap Deploy 4 from the bootable media or the PXE server.

As the target machines connect to the deployment server, they appear in the **Machines** view with a state of **Ready**.

While the deployment server is waiting, you are able to cancel the deployment by selecting the task and then clicking **Stop** on the toolbar.

As soon as the triggering condition arises, the available machines become engaged in the deployment, and their state changes to **Running**.

10.4.4 Booting the target machines

You need to manually boot the target machines into Acronis Snap Deploy 4 Agent in the following cases:

- To perform deployment to any ready machines (p. 106)

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- To perform deployment to the specific machines (p. 100) that do not support the Wake-on-LAN functionality

You can boot the machines by using a bootable media or Acronis PXE Server.

To boot a target machine

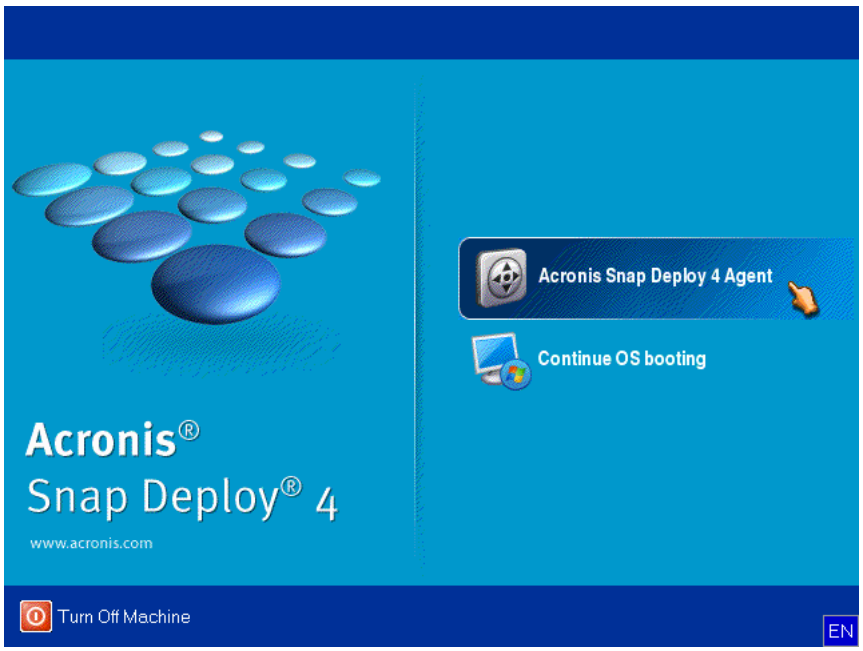
1. Do one of the following:
   - Create a bootable media (p. 59) with Acronis Snap Deploy 4 Agent.

   OR

   - Connect the management console to Acronis PXE Server and upload Acronis Snap Deploy 4 Agent (p. 65).

   Tip: *When creating the bootable media or uploading the agent to the PXE server, you can configure the agent to start automatically after a time-out.*

2. Boot the target machine into Acronis Snap Deploy 4 Agent from the bootable media or the PXE Server.



The boot menu on the target machine's side

3. Select Acronis Snap Deploy 4 Agent in the boot menu. You can skip this step if you configured the agent to start automatically.
4. [Optional.] Choose whether you want to configure the agent. The agent configuration includes the network settings and the address of Acronis Snap Deploy 4 OS Deploy Server. A dialog box comes up suggesting that you configure the agent.

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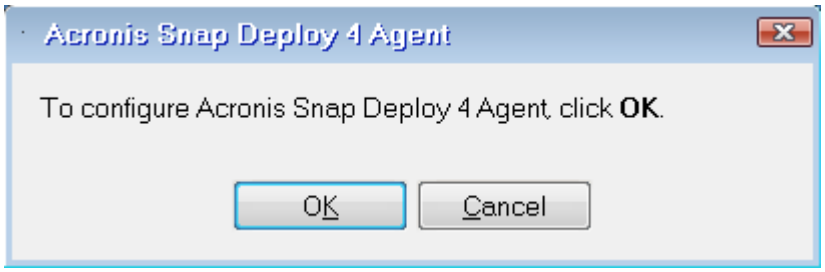
To load the agent with the default configuration (recommended in most cases), click **Cancel** or wait until the dialog box disappears after the time-out. To configure the agent before loading (recommended if your network does not have a DHCP server), click **OK**.



Prompt for configuring the agent on the target machine's side

With the default configuration, the agent:

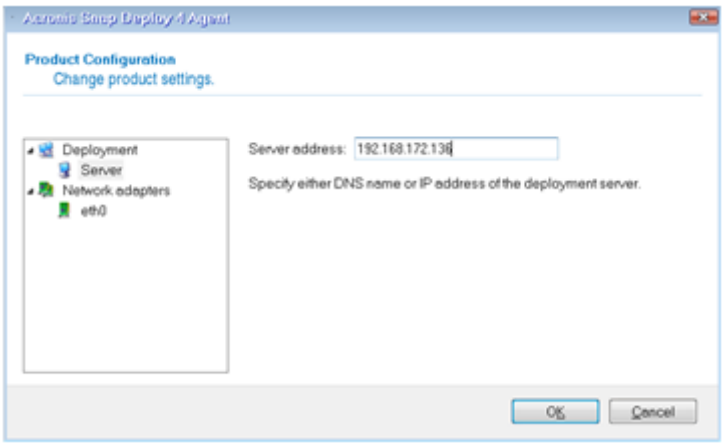
- Takes the network settings, such as the IP address, from the DHCP server (uses DHCP auto configuration).
- Connects to the Acronis Snap Deploy 4 OS Deploy Server that you specified when creating the bootable media or uploading the agent. If you did not specify a deployment server, the agent connects to the first deployment server it finds on the network.

You can load the agent with the default configuration if there is a DHCP server and only one Acronis Snap Deploy 4 OS Deploy Server on the network.

When configuring the agent, you can set up the following settings:

- Network settings for each network adapter of the target machine. This option enables you to manually specify network configuration if automatic configuration is not possible (for example, if no DHCP server is present on your network).
- The Acronis Snap Deploy 4 OS Deploy Server the agent will connect to. This option enables you to have multiple deployment servers that perform different functions on the same network. If you leave this field empty, the software will search for the deployment server automatically.

Note: *Acronis bootable media uses NetBIOS networking protocol to resolve Acronis Snap Deploy 4 OS Deploy Server in a network. NetBIOS protocol uses ANSI characters for host names. So, machines that have non-English characters in their names cannot be accessed from Acronis bootable media. If the name of the Acronis Snap Deploy 4 OS Deploy Server machine contains non-English characters, use the machine's IP-address to specify it in the network.*



Configuring the agent on the target side

Set the preferable values, and then click **OK**.

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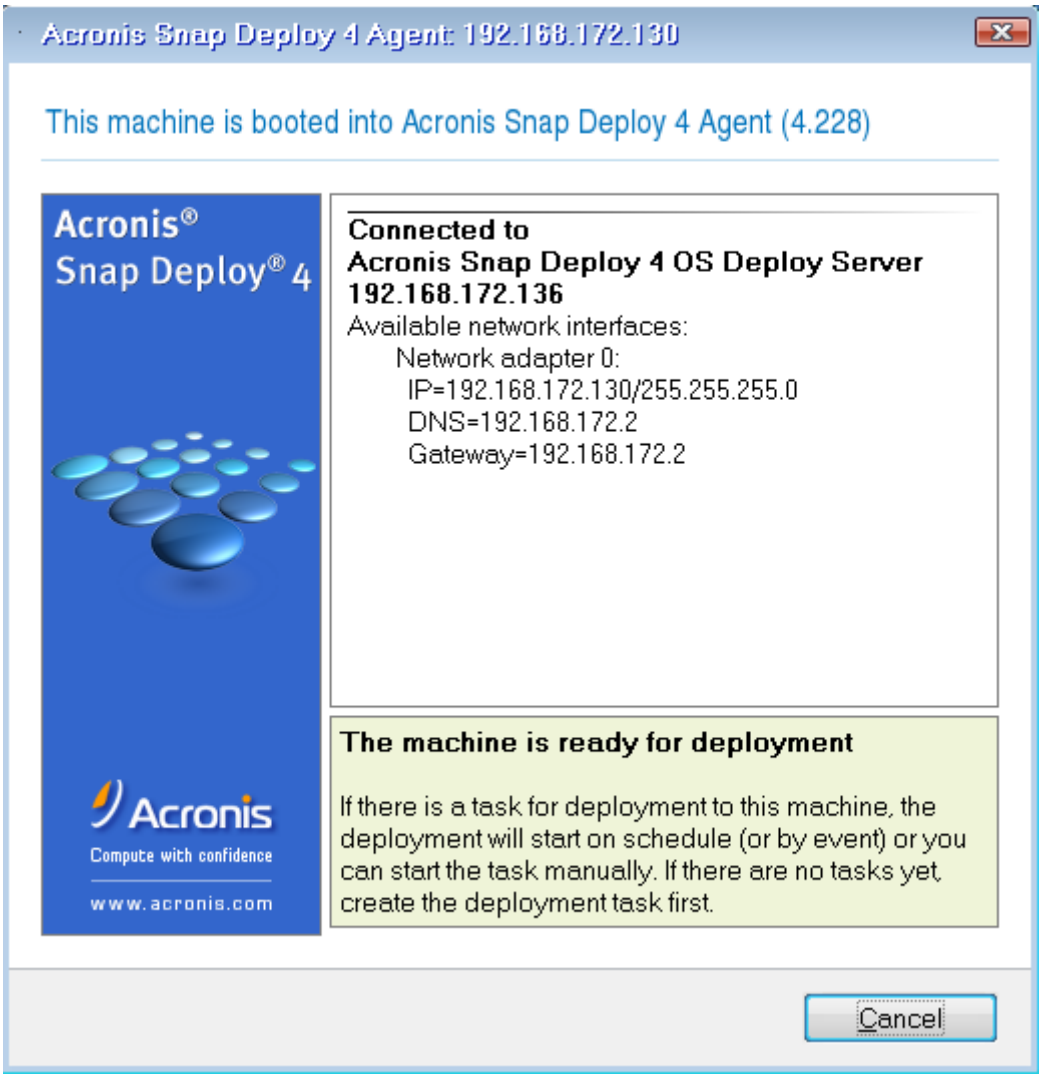
When Acronis Snap Deploy 4 Agent starts and the target machine is ready for deployment, the target machine displays the following window:


Acronis Snap Deploy 4 Agent: 192.168.172.130
This machine is booted into Acronis Snap Deploy 4 Agent (4.228)
Acronis®
Snap Deploy® 4
Acronis
Compute with confidence
www.acronis.com
Connected to
Acronis Snap Deploy 4 OS Deploy Server
192.168.172.136
Available network interfaces:
Network adapter 0:
IP=192.168.172.130/255.255.255.0
DNS=192.168.172.2
Gateway=192.168.172.2
The machine is ready for deployment
If there is a task for deployment to this machine, the deployment will start on schedule (or by event) or you can start the task manually. If there are no tasks yet, create the deployment task first.
Cancel

Acronis Snap Deploy 4 Agent: ready for deployment

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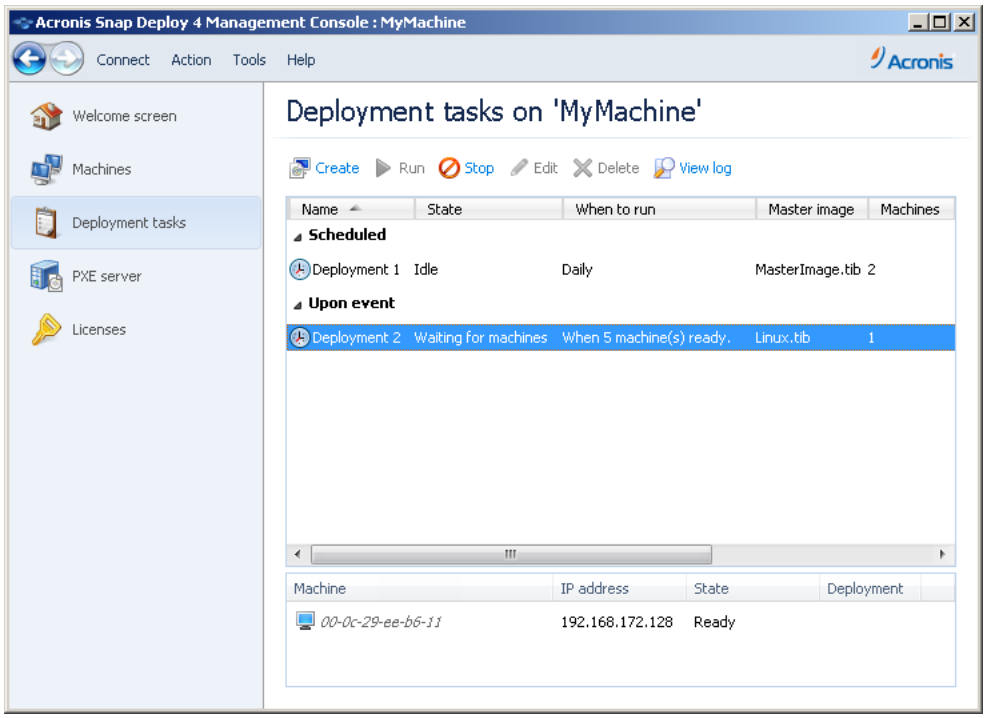
10.4.5 Operations with deployment tasks

Once a deployment task is created, it appears in the **Deployment tasks** view.



List of deployment tasks

To edit a task (for example, to change its schedule), select it and click **Edit**. Editing is performed in the same way as creation; but, the previously selected options are already set, so you need to enter only the changes.

Any task stays on the deployment server until you delete it. To delete a task, select the task and then click **Delete**.

To run a task immediately, select the task and then click **Run**. The task schedule remains unchanged.

You cannot edit or delete a task while it is running.

10.4.6 Deployment behind an NAT device

Successful deployment is not guaranteed if Acronis Snap Deploy 4 OS Deploy Server and the target machines are separated by a Network Address Translation (NAT) device. A typical router usually acts as an NAT device.

All machines behind an NAT device normally form a separate subnet and appear to the deployment server as having the same IP address. This may lead to problems when connecting to components of Acronis Snap Deploy 4 and when showing the deployment progress for each target machine.

To avoid these problems, we recommend installing Acronis Snap Deploy 4 OS Deploy Server in the same subnet as the target machines.

If installing the deployment server in that subnet is not possible, configure the NAT device as follows:

1. Set up *port forwarding* for the NAT device:

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- If Acronis Wake-on-LAN Proxy is installed in that subnet, forward the TCP and UDP ports 9876 to the machine with the Wake-on-LAN proxy.
- If Acronis PXE Server is installed in that subnet, forward UDP ports 67, 68, and 69 to the machine with the PXE server.

2. When creating the deployment task, specify the IP address of the NAT device when asked about the address of the PXE server and/or of the Wake-on-LAN proxy.

Even after you configure the NAT device this way, you might still receive inconsistent information about the deployment progress for each machine.

10.5 Stand-alone deployment

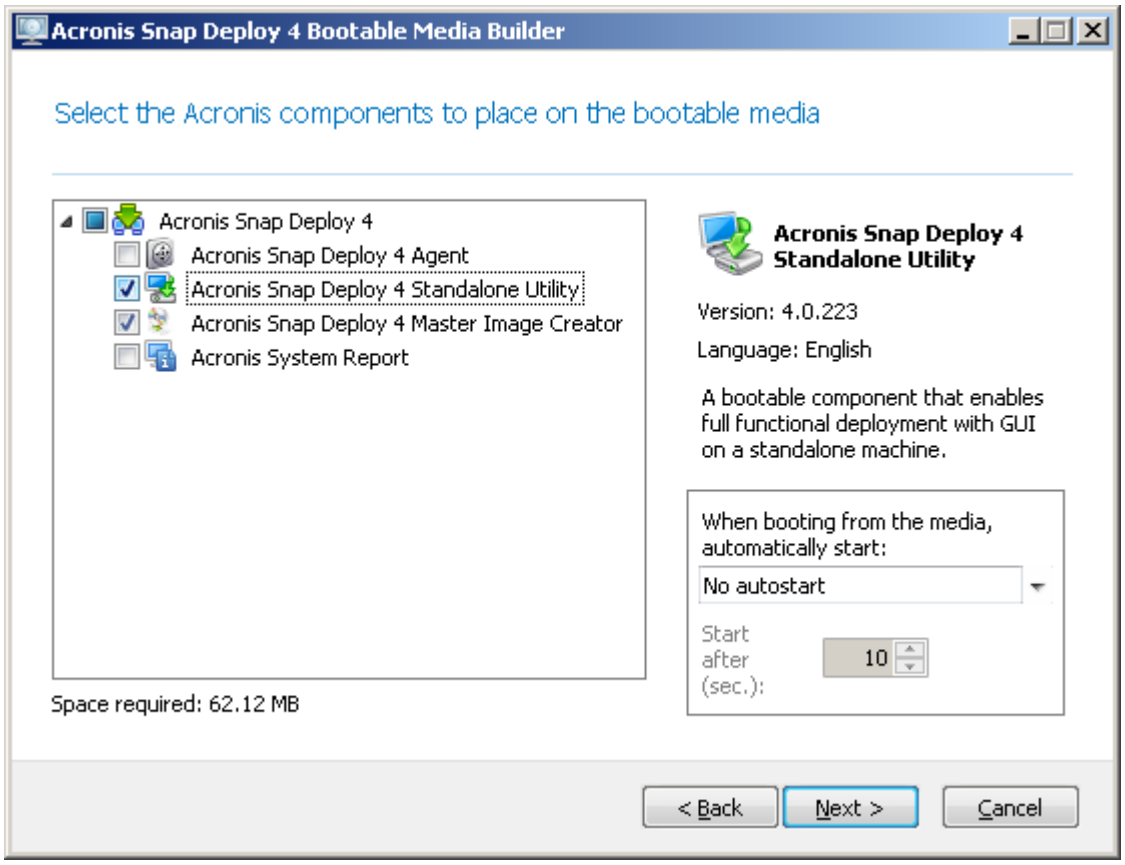
Stand-alone deployment is deployment to a machine that is isolated from the network or included in a network without Acronis Snap Deploy 4 infrastructure (to be exact, without Acronis Snap Deploy 4 OS Deploy Server). Stand-alone deployment is performed locally by using the bootable component called Acronis Snap Deploy 4 Standalone Utility.

The Acronis Universal Deploy (p. 26) option is not available in the stand-alone deployment mode.

To perform a stand-alone deployment

1. Install Acronis Snap Deploy 4 Management Console.
2. Create an Acronis bootable media (p. 59) with Acronis Snap Deploy 4 Master Image Creator and Acronis Snap Deploy 4 Standalone Utility.

Note: *Acronis Snap Deploy 4 Standalone Utility can be placed on a physical media only. This component is not designed to boot from a PXE server or from a WinPE-based bootable media.*


Acronis Snap Deploy 4 Bootable Media Builder
Select the Acronis components to place on the bootable media
Acronis Snap Deploy 4
Acronis Snap Deploy 4 Agent
Acronis Snap Deploy 4 Standalone Utility
Acronis Snap Deploy 4 Master Image Creator
Acronis System Report
Space required: 62.12 MB
Acronis Snap Deploy 4 Standalone Utility
Version: 4.0.223
Language: English
A bootable component that enables full functional deployment with GUI on a standalone machine.
When booting from the media, automatically start:
No autostart
Start after (sec.):
10
< Back
Next >
Cancel

The Acronis stand-alone components to be placed on the bootable media

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3. Configure the master system.
4. Boot the master system into Acronis Snap Deploy 4 Master Image Creator. Create an image of the master system and save it to a network folder, detachable media, or removable media. You should not save the image to an internal hard disk of the target machine, because it cannot be accessed during the stand-alone deployment.
5. Boot the target machine into Acronis Snap Deploy 4 Standalone Utility.
6. If you saved the master image to a media, attach or insert the media.

   Acronis Snap Deploy 4 Standalone Utility can deploy an image located:

   - In a network folder.
   - On a USB or FireWire (IEEE-1394) storage device (such as a flash drive) attached to the target machine.
   - On DVD+R/RW, DVD-R/RW, CD-R/RW, or recordable Blu-ray Discs (BD-R, BD-RE) loaded in the target machine's media drive.

   The image created on removable media has to fit into one media disk. To deploy an image spread over several CDs, DVDs or other media, copy all parts of the image to the same folder on an external drive or to a network folder.
7. Configure the deployment operation as described in "Creating a deployment template" (p. 80). Note that the template cannot be saved because the stand-alone utility does not access Acronis Snap Deploy 4 OS Deploy Server.
8. Review the deployment settings, and then start the stand-alone deployment.

10.6 User-initiated deployment (custom deployment)

Acronis Snap Deploy 4 can be configured in such a way that users will be able to deploy and re-deploy their machines with one click on the boot menu.

User-initiated deployment is also called custom deployment.

10.6.1 Understanding user-initiated deployment

An administrator creates a set of deployment templates (p. 80) that meet the organization's needs and assigns to each template a name that can be easily understood by a user.

The administrator creates an Acronis bootable media with these templates or uploads these templates to a PXE server. The administrator then switches on the user-initiated deployment mode.

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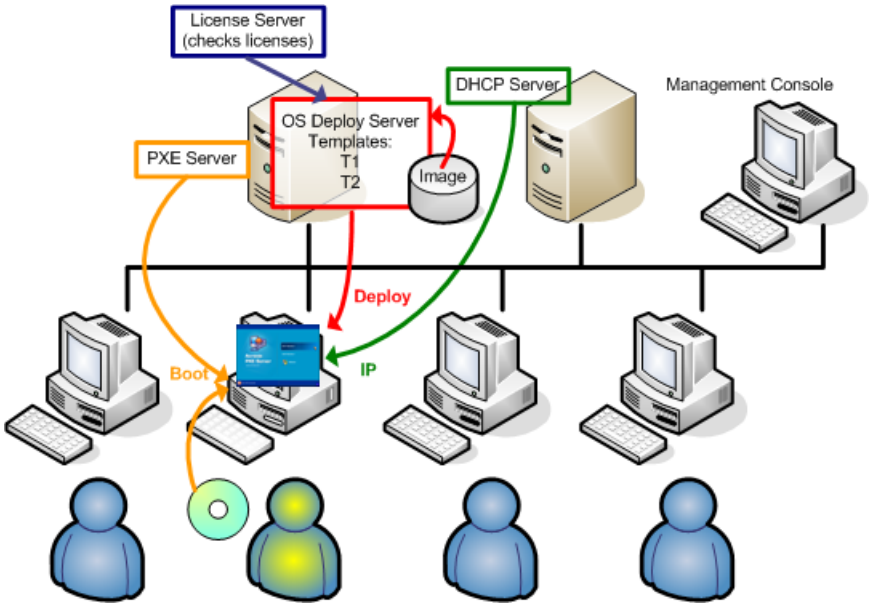
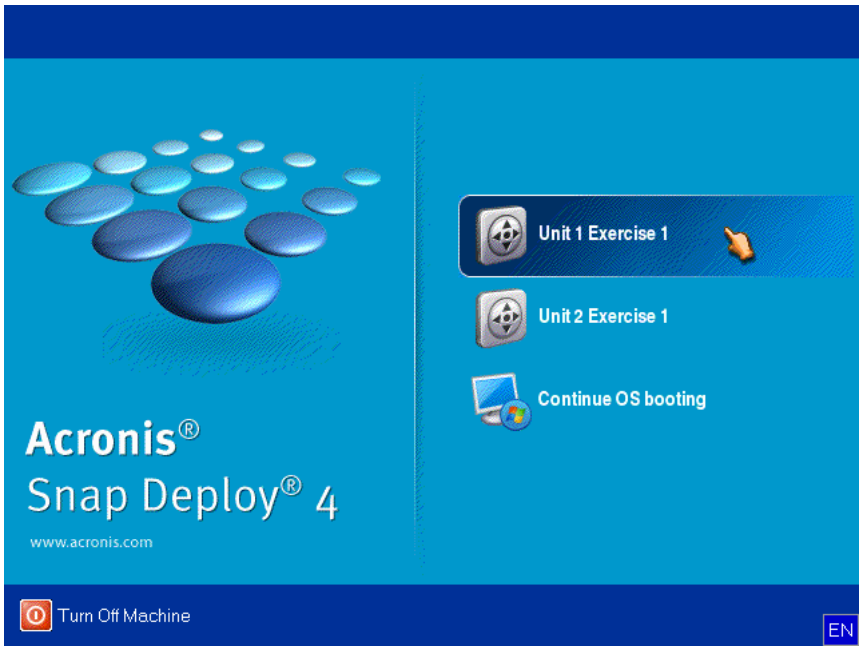
Users who need to redeploy their machines boot the machines from the bootable media or the PXE server, and select the template by name from the boot menu. The deployment starts immediately and proceeds independently on each machine.



User-initiated deployment mode: a user starts deployment.

In software testing labs, the choices can be various operating systems, various editions of the same operating system, or the same operating system with various settings or applications. In a university or school lab, the choices can be various exercises that students have to explore, or the initial system image for the purpose of self-restore.



The custom boot menu. A user can start deployment with any of the two templates or boot into Windows.

***Tip:** To find a template in the custom boot menu, press a letter key which corresponds to the first letter of the template name. The cursor will jump on the first template whose name starts with the pressed letter.*

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Important: *If the user-initiated deployment uses a PXE server, machines that are deployed through deployment tasks (p. 99) will not be able to boot from that PXE server. However, deployments to such machines will be possible if they boot from a bootable media.*

The user-initiated deployment mode is primarily intended for continual work without the administrator's assistance. Only users (the ones on the target side) will be able to initiate deployment. However, the administrator can view logs, create new deployment templates, change the user-initiated deployment configuration (add, edit or remove boot menu items) and perform other management operations except initiating the custom deployment.

10.6.2 Considerations when using a PXE server

When enabling or configuring the user-initiated deployment mode with Acronis PXE Server, the software first **removes all bootable components** (Acronis Snap Deploy 4 Agent, Acronis Snap Deploy 4 Master Image Creator, and the PE image) from the PXE server, because users might be confused by the unknown items appearing in the boot menu. Then, the software uploads to the PXE server the templates selected by the administrator. So **you will have to upload the bootable utilities again,** if they are needed after switching off the user-initiated deployment mode.

If you need to perform both user-initiated deployment and deployment through a deployment task, you can use the PXE server for the former and bootable media for the latter.

Alternatively, you can use another Acronis Snap Deploy 4 OS Deploy Server to perform deployment through deployment tasks, while one Acronis Snap Deploy 4 OS Deploy Server is in the user-initiated deployment mode. To do so, ensure that the target machines connect to the appropriate deployment server, by specifying the deployment server when creating the bootable media or by configuring Acronis Snap Deploy 4 Agent at boot. Two deployment servers cannot use the same Acronis PXE Server.

10.6.3 Setting up the user-initiated deployment mode

Preparation

1. Install Acronis Snap Deploy 4 Management Console and Acronis Snap Deploy 4 License Server. Import licenses to the license server. Install Acronis Snap Deploy 4 OS Deploy Server and Acronis PXE Server. All these components are already installed if you have performed a typical installation (p. 40).
2. Configure and image the master system (or systems), either from a bootable media with Acronis Snap Deploy 4 Master Image Creator (p. 68) or by using Acronis Snap Deploy 4 Management Agent (p. 68).

To set up user-initiated deployment

1. Start Acronis Snap Deploy 4 Management Console.
2. In the welcome screen, click **Configure user-initiated deployment**. If prompted, specify the machine where Acronis Snap Deploy 4 OS Deploy server is installed.

   Note: *If you are planning to use an Acronis PXE Server with user-initiated deployment and there are active operations that use that PXE server, either cancel those operations or wait until they are completed, before proceeding. See also "Considerations when using a PXE server" (p. 115).*

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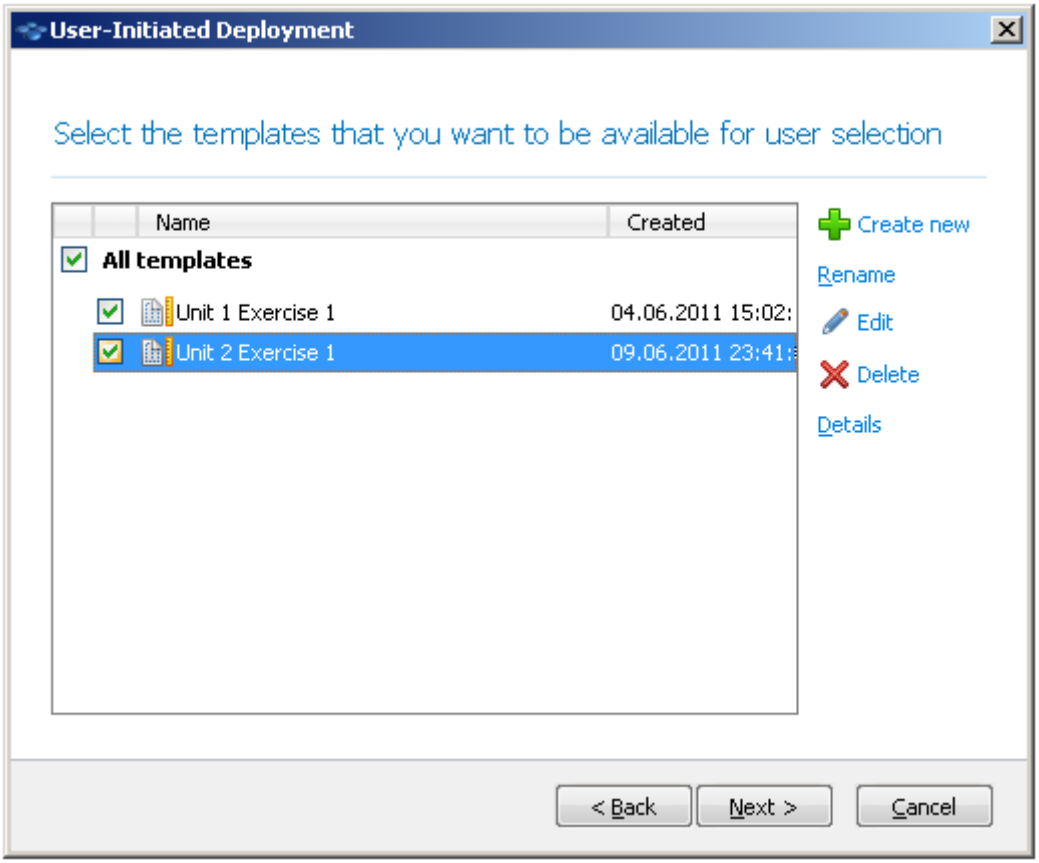
3. Create the deployment templates (p. 80) according to your organization's needs. Assign to each template a name that can be easily understood by the users. Select one or more templates to be added to the boot menu.



Adding templates to the boot menu

4. Select how to display the boot menu. For example, you can choose to start a particular deployment template automatically after a time-out.
5. Select whether you want to create an Acronis bootable media (a removable media or an ISO file of the media) or to upload the templates to Acronis PXE Server.
   - Having saved the ISO file, you can create as many media copies as the users need by using third-party CD/DVD burning software. When creating a bootable media for user-initiated deployment, you can specify network settings, such as the name of the deployment server, in the same way as when creating any other bootable media. For details, see "Creating an Acronis bootable media" (p. 59).
   - The templates being uploaded to the PXE server can be protected with a password to prevent the templates from unauthorized execution. A password prompt will come up when the user selects a template in the boot menu. No password will be required to start the operating system.

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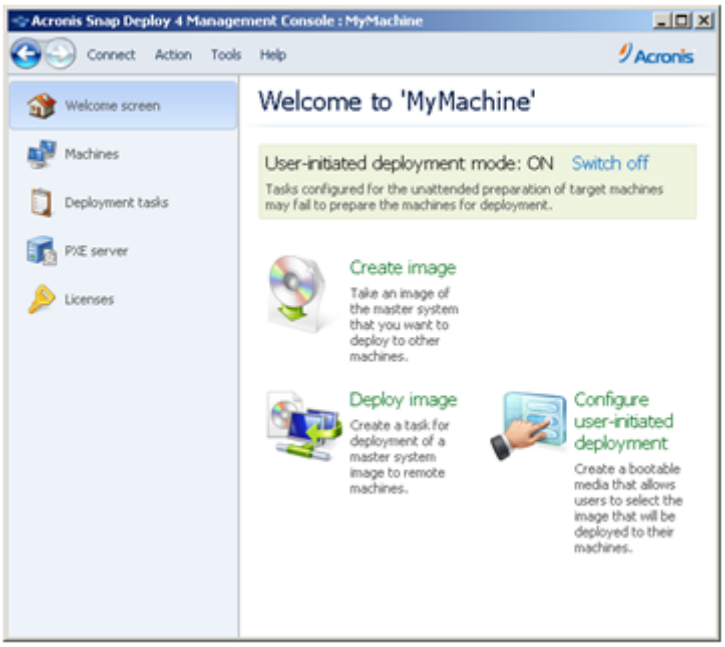
6. Review the operation summary and then click **Switch on** to proceed. The software creates the media with the custom boot menu. Acronis Snap Deploy 4 OS Deploy Server switches to the user-initiated deployment mode.


Acronis Snap Deploy 4 Management Console : MyMachine
Connect
Action
Tools
Help
Acronis
Welcome screen
Machines
Deployment tasks
PXE server
Licenses
Welcome to 'MyMachine'
User-initiated deployment mode: ON
Switch off
Tasks configured for the unattended preparation of target machines may fail to prepare the machines for deployment.
Create image
Take an image of the master system that you want to deploy to other machines.
Deploy image
Create a task for deployment of a master system image to remote machines.
Configure user-initiated deployment
Create a bootable media that allows users to select the image that will be deployed to their machines.

Acronis Snap Deploy 4 OS Deploy Server in the user-initiated deployment mode

In the **Machines** view, the administrator can see the status of the user-initiated deployment for each machine.

While the deployment server is in the user-initiated deployment mode, the administrator can:

- Change parameters (p. 118) of the user-initiated deployment mode.
- Create a new media for the user-initiated deployment mode.
- Stop the selected operation, if need be, by right-clicking the corresponding machine in the **Machines** view, and then clicking **Cancel deployment**.
- Switch off (p. 118) the user-initiated deployment mode.

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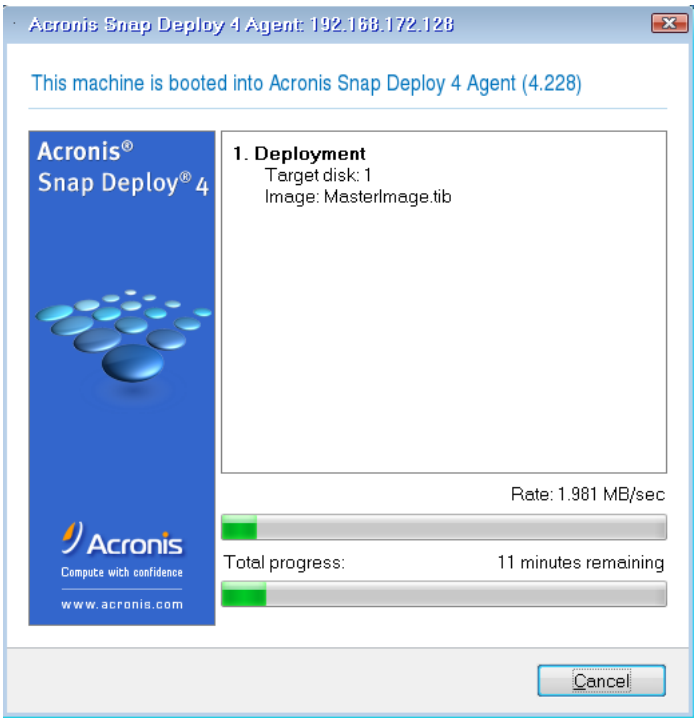
The user who requested deployment sees the following screen while the deployment is in progress.



User-initiated deployment in progress: view on the target machine's side

10.6.4 Changing parameters of the user-initiated deployment mode

To change the templates or the boot menu password used in the user-initiated deployment mode, you need to reconfigure the user-initiated deployment mode.

1. If some user-initiated deployment operations are active, either stop the operations or wait until the operations are completed.
2. In the welcome screen of the management console, click **Configure user-initiated deployment**, and then repeat the procedure described in "Setting up the user-initiated deployment mode" (p. 115). The earlier selected options will be set, so you have to enter only the changes.

10.6.5 Switching off the user-initiated deployment mode

To switch off the user-initiated deployment mode

1. If some user-initiated deployment operations are active, either stop the operations or wait until the operations are completed.
2. In the welcome screen of the management console, in the **User-initiated deployment mode** area, click **Switch off**.
3. If the user-initiated deployment mode uses Acronis PXE Server, the software needs to remove the custom deployment templates from the server. If prompted, specify the credentials for the PXE server (the user name and password of an administrator on the machine with the PXE server).

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10.7 BIOS-based systems to UEFI-based and vice versa

Acronis Snap Deploy 4 supports transferring Windows operating systems between BIOS-based hardware and the hardware that supports Unified Extensible Firmware Interface (UEFI).

Important: *When migrating systems to UEFI-based hardware, use Linux-based bootable media. PE-based bootable media and Acronis PXE Server do not support UEFI.*

10.7.1 Deploying volumes

Let's assume you have created a master image of the system and boot volumes (or the entire machine), and want to deploy these volumes to a different platform. The ability of the recovered system to boot up depends on the following factors:

- **Source operating system**: convertible or non-convertible OS. The following Microsoft Windows operating systems are convertible, that is, allow changing the boot mode from BIOS to UEFI and back:
  - Windows Vista SP1 x64 and later.
  - Windows Server 2008 x64 SP1 and later.
  - Windows 7 x64.
  - Windows Server 2008 R2 x64.
  - Windows 8 x64

  All other operating systems are non-convertible.
- **Source and target disk partition style**: MBR or GPT. System and boot volumes of BIOS platforms use MBR disks. System and boot volumes of UEFI platforms use GPT disks.

When selecting a not initialized target disk for recovery, this disk will be automatically initialized either to GPT or to MBR depending on the original disk partitioning style, the current boot mode (UEFI or BIOS) and the type of operating systems (convertible or non-convertible) that are located on this volume. If the initialization may result in bootability loss, the software takes the partitioning style from the source volume ignoring the target disk size. In such cases the software can select the MBR partitioning style for disks whose size is more than 2 TB; however, a user cannot use the space beyond 2 TB.

If required, you can initialize the target disk manually by using the Disk management functionality. The following table summarizes whether it is possible to retain the system bootability when recovering boot and system volumes of a BIOS-based system to UEFI-based and back.

- The plus (+) sign on a green background means that the system will be bootable. No user action is required.
- The plus (+) sign on a yellow background means you need to perform additional steps to make the system bootable.
- The minus (-) sign on a red background means the system will not be able to boot due to BIOS and UEFI platform limitations.

Original system	**Target hardware**			
	BIOS **Disk: MBR**	**BIOS** **Disk: GPT**	**UEFI** **Disk: MBR**	**UEFI** **Disk: GPT**

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<table>
<tr><td>BIOS

OS: convertible</td><td rowspan="2">+</td><td rowspan="2">-

Solution

Recover the operating system to an MBR disk.</td><td rowspan="2">+

Additional steps

1. Before recovery, turn off the UEFI mode in BIOS

2. Perform the recovery under the bootable media.

or

After recovery, turn off the UEFI mode in BIOS. Otherwise, the operating system cannot be booted.</td><td>+

The convertible OS will be automatically converted to support UEFI booting.</td></tr>
<tr><td>BIOS

OS: non-convertible</td><td>-

Solution

Recover the operating system to an MBR disk.</td></tr>
<tr><td>UEFI OS: convertible</td><td>+

The convertible OS will be automatically converted to support UEFI booting.</td><td rowspan="2">+

Additional steps

1. Before recovery, turn off the UEFI mode in BIOS

2. Perform the recovery under the bootable media.

or

After recovery, turn off the UEFI mode in BIOS. Otherwise, the operating system cannot be booted.</td><td rowspan="2">-

Solution

Recover the operating system to a GPT disk.</td><td rowspan="2">+</td></tr>
<tr><td>UEFI OS: non-convertible</td><td>-

Solution

Recover the operating system to a GPT disk.</td></tr>
</table>

10.7.2 Deploying disks

Let's assume you have taken a master image of a whole disk (with all its volumes) and want to deploy this disk to a different target platform.

The ability of the deployed system to boot up in different modes depends on the operating systems installed on the source disk. Operating systems can be convertible i.e. allow changing the boot mode from BIOS to UEFI and back, or be non-convertible. For the list of convertible operating systems, see Deploying volumes (p. 119).

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- When a source disk contains one or more operating systems and all of them are convertible, the boot mode can be automatically changed. Depending on the current boot mode, the target disk may be initialized either to GPT or to MBR partitioning style.
- If at least one operating system on a source disk is non-convertible (or the source disk contains any boot volumes of the non-convertible OSes), the boot mode cannot be changed automatically and the software will initialize the target disk as the source one. To boot up the target machine, you have to turn on/off the UEFI mode in BIOS manually. Otherwise, the system will not boot after recovery.

The following table summarizes all cases of recovering disks of a BIOS-based system to UEFI-based and vice versa.

- The plus (+) sign on a green background means that the source disk will be recovered without any limitations.
- The plus (+) sign on a yellow background means that the source disk will be recovered with some limitations. To overcome such limitations, you might need to perform some additional steps.
- The plus/minus (+/-) signs on a red background means the disk will be recovered, but some issues might occur.

Original system	**Target hardware**			
	Platform: BIOS **Target disk <2 TB**	**Platform: BIOS Target disk >2 TB**	**Platform: UEFI Target disk <2 TB**	**Platform: UEFI Target disk >2 TB**
BIOS OS: convertible	+ The source disk will be recovered without any modification.	- The target disk will be initialized as GPT. Recovered OS will be converted to use UEFI for booting.	+ The target disk will be initialized as MBR. **Additional steps** Turn off the UEFI mode in BIOS after recovery* **Possible issue** If target machine does not support BIOS, the system will not boot after recovery.	+ The target disk will be initialized as GPT. The recovered disk OS will be automatically converted to support UEFI booting.
BIOS OS: non-convertible	+ The source disk will be recovered without any modification.	+/- The target disk will be initialized as MBR.	+/- The target disk will be initialized as the source one (MBR).	+/- The target disk will be initialized as the source one (MBR).

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		Limitation: only 2 TB of the disk space will be available for use.	**Additional steps** Turn off the UEFI mode in BIOS after recovery* **Possible issue** If target machine does not support BIOS, the system will not boot after recovery.	**Limitation:** only 2 TB of the disk space will be available for use. **Additional steps** Turn off the UEFI mode in BIOS after recovery* **Possible issue** If target machine does not support BIOS, the system will not boot after recovery.
UEFI OS: convertible	- The recovered disk OS will not be automatically converted to support BIOS booting.	- The recovered disk OS will not be automatically converted to support BIOS booting.	+ The source disk will be recovered without any modification.	+ The source disk will be recovered without any modification.
UEFI OS: non-convertible	+/- The target disk will be initialized as the source one (GPT). Possible issue If target machine does not support UEFI, the system will not boot after recovery.	+/- The target disk will be initialized as the source one (GPT). **Possible issue** If target machine does not support UEFI, the system will not boot after recovery.	+ The source disk will be recovered without any modification.	+ The source disk will be recovered without any modification.

* In most of the current motherboards there is a BIOS compatibility mode. So, if the system does not find any UEFI boot loader it will try to boot system in BIOS mode.

10.8 Bootability troubleshooting

If a system was bootable at the time of taking master image, you expect that it will boot after deployment. However, the information the operating system stores and uses for booting up may

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become outdated during deployment, especially if you change volume sizes, locations or destination drives. Acronis Snap Deploy 4 automatically updates Windows loaders after deployment. Other loaders might also be fixed, but there are cases when you have to re-activate the loaders. Specifically, when you deploy Linux volumes, it is sometimes necessary to apply fixes or make booting changes so that Linux can boot and load correctly.

Below is a summary of typical situations that require additional user actions.

Why a deployed operating system may be unbootable

- **The machine BIOS is configured to boot from another HDD.**

  Solution: Configure the BIOS to boot from the HDD where the operating system resides.

- **The system was deployed to dissimilar hardware and the new hardware is incompatible with the most critical drivers included in the backup**

  Solution: Use Acronis Universal Deploy option in deployment template (p. 80) to install the appropriate drivers and modules.

- The system uses Acronis OS Selector

  Because the Master Boot Record (MBR) can be changed during the system deployment, Acronis OS Selector, which uses the MBR, might become inoperable. If this happens, reactivate Acronis OS Selector as follows.

  Solution: Boot the machine from the Acronis Disk Director's bootable media and select in the menu Tools -> Activate OS Selector.

- **The system uses GRand Unified Bootloader (GRUB) and was recovered from a normal (not from a raw, that is, sector-by-sector) master image**

  One part of the GRUB loader resides either in the first several sectors of the disk or in the first several sectors of the volume. The rest is on the file system of one of the volumes. System bootability can be recovered automatically only when the GRUB resides in the first several sectors of the disk and on the file system to which direct access is possible. In other cases, the user has to manually reactivate the boot loader.

  Solution: Reactivate the boot loader. You might also need to fix the configuration file.

- **The system uses Linux Loader (LILO) and was recovered from a normal (not from a raw, that is, sector-by-sector) master image**

  LILO contains numerous references to absolute sector numbers and so cannot be repaired automatically except for the case when all data is deployed to the sectors that have the same absolute numbers as on the source disk.

  Solution: Reactivate the boot loader. You might also need to fix the loader configuration file for the reason described in the previous item.

- The system loader points to the wrong volume

  This may happen when system or boot volumes are not recovered to their original location.

  Solution: Modification of the boot.ini or the boot\bcd files fixes this for Windows loaders. Acronis Snap Deploy 4 does this automatically and so you are not likely to experience the problem. For the GRUB and LILO loaders, you will need to correct the GRUB configuration files. If the number of the Linux root partition has changed, it is also recommended that you change /etc/fstab so that the SWAP volume can be accessed correctly.

- **Linux was deployed from an LVM volume master image to a basic MBR disk**

  Such system cannot boot because its kernel tries to mount the root file system at the LVM volume.

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Solution: Change the loader configuration and /etc/fstab so that the LVM is not used and reactivate the boot loader.

10.8.1 How to reactivate GRUB and change its configuration

Generally, you should refer to the boot loader manual pages for the appropriate procedure. There is also the corresponding Knowledge Base article on the Acronis Web site. The following is an example of how to reactivate GRUB in case the system disk (volume) is deployed to identical hardware.

1. Start Linux or boot from the bootable media, press F11 in Acronis boot menu, remove word "quiet" and press OK. That will boot Acronis media in command line mode.
2. Mount the system you are deploying:

   ```
   mkdir /mnt/system/ mount -t ext3 /dev/sda2 /mnt/system/ # root partition mount -t ext3 /dev/sda1 /mnt/system/boot/ # boot partition
   ```

3. Mount the **proc** and **dev** file systems to the system you are deploying:

   ```
   mount -t proc none /mnt/system/proc/ mount -o bind /dev/ /mnt/system/dev/
   ```

4. Save a copy of the GRUB menu file, by running one of the following commands:

   ```
   cp /mnt/system/boot/grub/menu.lst /mnt/system/boot/grub/menu.lst.backup or cp /mnt/system/boot/grub/grub.conf /mnt/system/boot/grub/grub.conf.backup
   ```

5. Edit the **/mnt/system/boot/grub/menu.lst** file (for Debian, Ubuntu, and SUSE Linux distributions) or the **/mnt/system/boot/grub/grub.conf** file (for Fedora and Red Hat Enterprise Linux distributions)—for example, as follows:

   ```
   vi /mnt/system/boot/grub/menu.lst
   ```

6. In the **menu.lst** file (respectively **grub.conf**), find the menu item that corresponds to the system you are recovering. This menu items have the following form:

   ```
   title Red Hat Enterprise Linux Server (2.6.24.4) root (hd0,0) kernel /vmlinuz-2.6.24.4 ro root=/dev/sda2 rhgb quiet initrd /initrd-2.6.24.4.img
   ```

   The lines starting with **title**, **root**, **kernel**, and **initrd** respectively determine:

   - The title of the menu item.
   - The device on which the Linux kernel is located—typically, this is the boot partition or the root partition, such as **root (hd0,0)** in this example.
   - The path to the kernel on that device and the root partition—in this example, the path is **/vmlinuz-2.6.24.4** and the root partition is **/dev/sda2**. You can specify the root partition by label (such as **root=LABEL=/**), identifier (in the form **root=UUID=**`some_uuid`), or device name (such as **root=/dev/sda2**).
   - The path to the **initrd** service on that device.

7. Edit the file **/mnt/system/etc/fstab** to correct the names of any devices that have changed as a result of the recovery.
8. Start the GRUB shell by running one of the following commands:

   ```
   chroot /mnt/system/ /sbin/grub or chroot /mnt/system/ /usr/sbin/grub
   ```

9. Specify the disk on which GRUB is located—typically, the boot or root partition:

   ```
   root (hd0,0)
   ```

10. Install GRUB. For example, to install GRUB in the master boot record (MBR) of the first disk, run the following command:

    ```
    setup (hd0)
    ```

11. Exit the GRUB shell:

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```
quit
```

12. Unmount the mounted file systems and then reboot:

```
umount /mnt/system/dev/ umount /mnt/system/proc/ umount /mnt/system/boot/
umount /mnt/system/ reboot
```

13. Reconfigure the bootloader by using tools and documentation from the Linux distribution that you use. For example, in Debian and Ubuntu, you may need to edit some commented lines in the **/boot/grub/menu.lst** file and then run the **update-grub** script; otherwise, the changes might not take effect.

10.8.2 How to reactivate LILO

Generally, you should refer to the boot loader manual pages for the appropriate procedure. There is also the corresponding Knowledge Base article on the Acronis Web site. The following is an example of how to reactivate LILO in case the system disk (volume) is deployed to identical hardware.

1. Boot from Linux installation CD and enter rescue mode;
2. Mount all partitions and change root from the temporary root to the root partition of the installed system:

```
#mkdir /mnt/tmp

#mount /dev/sdXY /mnt/tmp (/dev/sdXY is the root partition)

#chroot /mnt/tmp
```

3. Run the following command to reactivate LILO:

```
#/sbin/lilo
```

4. Reboot.

10.8.3 About Windows loaders

Windows NT/2000/XP/2003

A part of the loader resides in the partition boot sector, the rest is in the files ntldr, boot.ini, ntdetect.com, ntbootdd.sys. boot.ini is a text file that contains the loader configuration. Example:

```
[boot loader] timeout=30
default=multi(0)disk(0)rdisk(0)partition(1)\WINDOWS [operating
systems] multi(0)disk(0)rdisk(0)partition(1)\WINDOWS="Microsoft
Windows XP Professional" /noexecute=optin /fastdetect
```

Windows Vista/2007

A part of the loader resides in the partition boot sector, the rest is in the files bootmgr, boot\bcd. At starting Windows, boot\bcd is mounted to the registry key HKLM \BCD00000000.

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11 Managing the list of machines (the Machines view)

The **Machines** view shows a list of machines for which you can set up deployment by using Acronis Snap Deploy 4 OS Deploy Server.

A machine is determined by the MAC address of its network adapter. A MAC address is a set of six hexadecimal numbers, such as: 01-35-79-BD-F1-23.

The list of machines includes:

- The machines that you added to the list. For example, you can add machines by using a file with MAC addresses.
- The machines that have ever connected to the deployment server.

The lower part of the window shows details about the selected machine and enables setting up individual deployment settings (p. 129) for it.

To open the Machines view

1. Start Acronis Snap Deploy 4 Management Console.
2. Click **Machines**. If prompted, specify the name or IP address of the machine with Acronis Snap Deploy 4 OS Deploy Server.

11.1 Adding machines

To add one or more machines to the list, click **Add machines** on the toolbar.

You can add machines in either of these ways:

- **By MAC address**: Type the MAC address of the machine.

  Optionally, provide a label that will be shown in the **Machine** column.
- **From file**: Specify a text file with the list of MAC addresses, one machine per line. If the machine has more than one network adapter, separate the MAC addresses for each adapter with a semicolon (;). No space character is allowed between the MAC addresses.

  The hexadecimal numbers in a MAC address can be separated by a colon (:) or a hyphen (-), or have no separator.

  Optionally, provide a label that will be shown in the **Machine** column. The label must follow the MAC address (or addresses). The label and the MAC address must be tab separated. In text editors such as Notepad, you can normally insert a tab character by pressing the TAB key. The label itself cannot contain a tab character.

  The following is a sample file:

```
00:01:23:45:67:1A
02-01-23-45-67-1B      My machine
010203040506    Machine 2
00-11-22-33-44-55;AA-BB-CC-DD-EE-FF Machine 3
```

In either case, the label that you provide is unrelated to the network name of the machine. If no label is provided, the **Machine** column will contain the MAC address of the machine.

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Tip: *Make sure that you specify the MAC address correctly. Any set of six hexadecimal numbers is recognized as a valid MAC address of a machine, even if a network adapter with that address does not actually exist.*

11.2 Groups of machines

Using groups helps you to organize the list of machines.

For example, you can create a separate group for each department in your organization. You can then perform deployment to some or all machines of a department by selecting them in the corresponding group.

Each machine can be a member of one or more groups.

To create a group, click **Create group** on the toolbar, and then type the name of the group.

To add one or more machines to a group, select them in the list, click **Add to group** on the toolbar, and then select the group to add the machines to.

A group itself cannot be specified for deployment.

To create a deployment task for all machines that are *currently* in a group, right-click the group, and then click **Deploy image**. Subsequent changes to the group do not affect the list of machines in the deployment task.

In addition to the groups you create, there is the **All machines** built-in group. It contains the entire list of machines.

11.3 Actions on machines

To perform an action on a machine, right-click that machine in the list. Most actions are also available when you select more than one machine.

The actions are the following:

- **Deploy image**: Starts the Create Deployment Task Wizard (p. 99). By default, the deployment task is being created for the selected machine (or machines).
- **Cancel deployment**: Cancels the currently running deployment for the selected machine.
- **Add to group**: Adds the selected machines to a group you previously created.
- **Remove from group**: For the selected machines in a group, removes them from that group.
- **Delete**: Removes the selected machines from the list. The machine will reappear in the list the next time it connects to the deployment server.
- **Deny deployments**: Excludes the selected machines from any deployment through the deployment server. As a result:
  - Any deployment tasks do not apply to the machine. However, the list of machines in those tasks is not affected.
  - User-initiated deployment (p. 113) for the selected machines is not possible.
  - Stand-alone deployment (p. 112) for the selected machines is possible, because it does not use the deployment server.
- **Allow deployments**: Undoes the exclusion of the selected machines that was previously done by the **Deny deployments** action.

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- **Set label**: Sets the label that is shown in the **Machine** column. For example, you can use the network name of the machine as the label. If no label is provided, the **Machine** column shows the MAC address of the machine.

11.4 States and results for machines

The **State** column shows the current state related to deployment.

The state can be one of the following:

- **Not ready**: The machine is not connected to the deployment server; for example, the machine is turned off.

  For deployment to specific machines (p. 100), the deployment server will wake up the turned-off machine when the scheduled time comes or when you start the task manually.

  For deployment to any ready machines (p. 106), you will have to boot the machine into Acronis Snap Deploy 4 Agent.
- **Ready**: The machine is booted into Acronis Snap Deploy 4 Agent and is connected to the deployment server, so the machine is ready for deployment.
- **In progress** (shown as percentage complete): A deployment is currently being performed to the machine.
- **Deployments denied**: You excluded the machine from deployment (see the **Deny deployments** (p. 127) action).

The **Last result** column shows the result of the last deployment operation on the machine.

The result can be one of the following:

- **Never deployed**: No deployment has yet been performed on the machine since it was added to the deployment server.
- **Succeeded**: The deployment to the machine finished successfully.
- **Failed**: The deployment to the machine failed. For example, no available license for performing deployment has been found on the license server. If performing the deployment started but did not finish successfully, the target disk or volume may be empty or contain inconsistent information.
- **Canceled**: You stopped the deployment task that was performing deployment to the machine (see the **Stop** (p. 131) action). The master image was not deployed to the machine. The target disk or volume may be empty or contain inconsistent information.

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12 Individual deployment settings

By using individual settings for a machine, you can override one or more deployment settings (p. 84) of a deployment template.

Example. You created a deployment template to perform deployment to 100 machines. For one of those machines, however, you need to perform deployment to a different hard disk than the one prescribed by the template. You override the **Target disk layout** (p. 85) setting for that machine.

By default, all templates recognize individual settings. You can set up a particular template to ignore any individual settings (p. 87).

12.1 Enabling, disabling, and resetting individual settings

To enable an individual setting for a machine

1. In the **Machines** view, click the machine for which you want to set up individual settings.
2. On the **Individual settings** tab, click **Configure**.
3. Click the setting that you want to override.
4. Select the **Enable this setting to override the common deployment setting** check box.
5. Specify the individual setting.

To disable an individual setting for a machine

1. In the **Machines** view, click the machine for which you want to disable an individual setting.
2. On the **Individual settings** tab, click the setting that you want to disable.
3. Clear the **Enable this setting to override the common deployment setting** check box.

   Tip: *The value that you specified for the individual setting is still remembered, so you can easily re-enable the setting by reselecting the check box.*

To reset individual settings for a machine

1. In the **Machines** view, click the machine for which you want to reset individual settings.
2. On the **Individual settings** tab, click **Reset**.

   As a result, all individual settings are disabled, and all values are returned to the preset settings. The preset settings are the same as for the default deployment settings (p. 98).

12.2 List of individual settings

The following are the individual settings that you can specify. The description of these settings is similar to that of the common deployment settings (p. 84), with the differences described in this section.

- **Target disk layout** (p. 85)
- **Disk space utilization** (p. 86)
- **Machine name and membership** (p. 87)

  Specify the machine name in **Machine name**. Because this is an individual name, use of name patterns is not available.
- **TCP/IP properties** (p. 89)

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If you choose to use a specific (static) IP address, specify that address in **IP address**. Because this is an individual address, use of IP address range is not available.

- **User accounts** (p. 90)
- **Security identifiers** (p. 91)
- **Action after deployment** (p. 91)
- **Licensing** (p. 94)

  By selecting the **Use machine license** check box, you force using a machine license for the machine, even if the template prescribes using deployment licenses.

  If no machine license is available, the software will act according to the setting in the template: it will either stop deployment to the machine, or use a deployment license.

  A machine license enables an unlimited number of deployments. A deployment license enables a single successful deployment.

  This individual setting cannot be changed if the machine already uses a machine license.

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13 Managing deployment tasks (the Deployment tasks view)

The **Deployment tasks** view contains the list of deployment tasks (p. 99) that you previously created on Acronis Snap Deploy 4 OS Deploy Server.

To open the Deployment tasks view

1. Start Acronis Snap Deploy 4 Management Console.
2. Click **Deployment tasks**. If prompted, specify the name or IP address of the machine with Acronis Snap Deploy 4 OS Deploy Server, and the user name and password of an administrator on that machine.

13.1 List of deployment tasks

The upper part of the view shows the list of deployment tasks and related information, such as the name of the master image that will be deployed by the task.

The list of deployment tasks is divided into three categories:

- **Scheduled**: Tasks that will run once or more at a time you specified. For details about creating such tasks, see "Deployment to specific machines" (p. 100).
- **Upon event**: Tasks that will perform deployment as soon as a specified number of machines becomes ready for deployment. For details about creating such tasks, see "Deployment to any ready machines" (p. 106).

  One of these tasks may be already running and waiting for the machines. If none of these tasks is running, you can start any of them manually.
- **Manual start**: Tasks that perform deployment to specific machines (p. 100) and have no schedule. These are tasks that you chose to run **Manually**, and completed tasks that you chose to run **Now** or **Once later**.

To start any of the deployment tasks manually, select the task, and then click **Run** on the toolbar.

The lower part of the view shows the machines that are related to the selected task. The list depends on the type of task.

- For a task that performs deployment to specific machines (p. 100): the list of machines to which the task performs deployment. Deployment will start on a schedule or when you start the task manually.
- For a task that performs deployment to any ready machines (p. 106): the list of machines that are currently ready for deployment (have the **Ready** (p. 128) state). Deployment will start as soon as a sufficient number of machines become ready (or after a time-out), even if you start the task manually.

13.2 Actions on deployment tasks

To perform an action on a deployment task, select the task in the list. The available actions appear on the toolbar.

The actions are the following:

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- **Create**: Starts the Create Deployment Task Wizard (p. 99).
- **Run**: Starts the selected task. The task will wait for machines to become ready and then will perform deployment to them.
- **Stop**: Stops the selected task. The machines whose deployment finished by the time you stop the task remain deployed (the last result (p. 128) for such machines is **Succeeded**).
- **Edit**: Edits the task in the Create Deployment Task Wizard.
- **Delete**: Deletes the task from the deployment server.
- **View log**: Shows the log entries related to the selected task.

13.3 States and results for deployment tasks

The **State** column shows the current state of the task.

The state can be one of the following:

- **Idle**: The task is not running. It will run on a schedule or when a specified number of machines become ready. Alternatively, you can start the task manually.
- **Waiting for machines**: The task has started but is waiting for machines to become ready. This state occurs in the following cases:
  - A task that performs deployment to a specific list of machines waits until the machines are woken up.
  - A task that performs deployment to a number of any ready machines waits until this number is reached.
- **In progress** (shown as percentage complete): The task is performing deployment. After deployment has finished on all machines, the task state becomes **Idle**.
- **Stopping**: The task is stopping after you chose to stop it or after not enough machines became ready after a time-out. The task will then enter the **Idle** state.

The **Last result** column shows the result of the deployment task.

The result can be one of the following:

- **Succeeded**: Deployment has been successful on all of the machines where it started (all of these machines have the **Succeeded** (p. 128) result).
- **Failed**: Deployment to one or more machines failed (a machine has the **Failed** (p. 128) result).
- **Stopped**: The task has been stopped. This state occurs in either of these cases:
  - You stopped the task, by using the **Stop** action (p. 131).
  - The task stopped because not enough machines became ready for deployment, according to the deployment start condition you specified when creating the deployment task (p. 102).

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14 Command-line mode and scripting under WinPE

Having booted a machine in Windows Preinstallation Environment (WinPE), the administrator can perform imaging or deployment in the command-line mode or execute scripts.

Acronis Snap Deploy 4 Command-Line Utility is included in a WinPE-based bootable media that you can create by using Acronis Snap Deploy 4 Management Console (p. 62).

The section "Sample scenarios" *(p. 142)* provides examples of using the command-line utility.

Limitation. Acronis Snap Deploy 4 Command-Line Utility can generate a new security identifier (SID) but cannot adjust other settings on the fly. To change the machine name, domain or workgroup membership, and other settings, either use the graphical user interface or apply the Microsoft System Preparation Tool (Sysprep) to the master system and specify the new settings in the Sysprep.inf answer file.

14.1 Command-line syntax

This section provides the list of commands and parameters of Acronis Snap Deploy 4 Command-Line Utility.

14.1.1 Supported commands

Acronis Snap Deploy 4 Command-Line Utility `asdcmd.exe` has the following format:

```
asdcmd /command /parameter1 [/parameter2 …]
```

Commands may be accompanied with parameters. Some parameters are common for most commands of `asdcmd`, while others are specific for individual commands. The following is the list of supported commands and compatible parameters.

Command	Common parameters	Specific parameters

`create`
Creates an image of specified disks and volumes
	`/filename:<file name>`
	`/password:<password>`
	`/net_user:<user name>`
	`/net_password:<password>`
	`/incremental`
	`/differential`
	`/compression:<0…9>`
	`/split:<size in MB>`
	`/oss_numbers`
	`/reboot`
	`/shutdown`
	`/log:<file name>`
	`/log_net_user:<remote user>`
	`/log_net_password:<password>`
		`/harddisk:<disk number>`
		`/partition:<volume number>`
		`/file_partition:<volume letter>`
		`/raw`
		`/progress:<on|off>`

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deploy Deploys disks and volumes, including the master boot record (MBR), from an image	/filename:<file name> /password:<password> /net_user:<user name> /net_password:<password> /oss_numbers /reboot /shutdown /log:<file name> /log_net_user:<remote user> /log_net_password:<password>	/harddisk:<disk number> /partition:<disk number>-<volume number> /target_harddisk:<disk number> /target_partition:<disk number>-<volume number> /start:<start sector> /fat16_32 /size:<volume size in sectors> /type:<active|primary|logical> /preserve_mbr /preserve_disk_layout /license_server:<server IP address> /grant_server_license /use_machine_license /use_deployment_license When using the Acronis Universal Deploy add-on: /ud_path:<path> /ud_username:<user name> /ud_password:<password> /ud_driver:<inf-file name>
verify Verifies the image integrity	/filename:<file name> /password:<password> /net_user:<user name> /net_password:<password> /reboot /shutdown /log:<file name> /log_net_user:<remote user> /log_net_password:<password>	
list Lists available drives and volumes. With the filename parameter, lists the contents of the image	/password:<password> /net_user:<user name> /net_password:<password>	/filename:<file name>

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email_n Turns on e-mail notifications about deployment		/email_from:<sender address> /email_to:<recipient address> /email_subject:<message subject> /email_smtp:<SMTP server address> /email_port:<SMTP server port> /email_user:<SMTP server user name> /email_password:<SMTP server user password> /email_encryption:<no|ssl|tls>
email_n_test Sends a test e-mail message		The same as for the email_n command

14.1.2 Common parameters (parameters common for most commands)

Parameter	Description	Image location
Access to images		
/filename:<file name>	Specifies the full path to the image, including the file name	Any
/password:<password>	Specifies the password for the image (if required)	Any
/net_user:<user name>	Specifies a user name for accessing the network drive	Network drive
/net_password:<password>	Specifies a password for accessing the network drive	Network drive
Imaging options		
/incremental	Sets the image type to incremental. If this parameter is not specified or if there is no basic full image, a full image will be created. An incremental image stores changes to the data against the latest image. The name of an incremental image is the name you specified in the /filename parameter, followed by an index; for example: MasterImage2.tib, MasterImage3.tib, and so on. To deploy an incremental image, specify its name in the /filename parameter of the deploy command. Make sure that the image is in the same folder as all images it depends on.	Any

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/differential	Sets the image type to differential. If this parameter is not specified or if there is no basic full image, a full image will be created. A differential image stores changes to the data against the latest *full* image. The name of a differential image is the name you specified in the /filename parameter, followed by an index; for example: MasterImage2.tib, MasterImage3.tib, and so on. To deploy a differential image, specify its name in the /filename parameter of the deploy command. Make sure that the image is in the same folder as the full image.	Any
/compression:<0…9>	Specifies the data compression level. The compression level ranges from 0 to 9 and is set to 3 by default	Any
/split:<size in MB>	Splits the image into parts of the specified size, in megabytes	Any
General options		

/oss_numbers	If this parameter is specified, the numbers of the volumes in the /partition parameter are adjusted for the MBR partition table. This means that primary volumes have numbers 1-1, 1-2, 1-3, and 1-4 (a disk cannot have more than four primary volumes); logical volume numbers start with 1-5.
	
	If this parameter is not specified, consecutive volume numbering must be used.
	
	For example, if the disk has one primary volume and two logical volumes, their numbers can appear as follows:
	
	`/oss_numbers /partition:1-1,1-5,1-6`
	
	or
	
	`/partition:1-1,1-2,1-3`
		Any

/reboot	Restarts the machine after the operation is completed. Cannot be used with the /shutdown option	Any
/shutdown	Shuts down the machine after the operation is completed. Cannot be used with the /reboot option	Any

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/log:<file name>	Creates a log file of the current operation with the specified file name	Any
/log_net_user:<remote user>	If the log file is created in a network folder, specifies the user name for accessing that folder	Any
/log_net_password:<password>	If the log file is created in a network folder, specifies the password for accessing that folder	Any

14.1.3 Specific parameters (parameters specific for individual commands)

Option	Description
create	
/harddisk:<disk number>	Specifies the hard disks to include into the image. An image may contain data of more than one hard disk. In that case, separate disk numbers by commas, for example: `/harddisk:1,3` To view the list of available hard disks, use the /list command.
/partition:<disk number>-<volume number>	Specifies the volumes to include into the image file. Volume numbers are specified as <disk number>-<volume number>, for example: `/partition:1-1,1-2,3-1` See also the /oss_numbers parameter. To view the list of available volumes, use the /list command.
/raw	Use this parameter to create an image of a volume with an unrecognized or unsupported file system, or of a disk that contains such volume. With this parameter, all contents of the disk or volume will be copied sector-by-sector. Without this parameter, only the sectors containing useful system and user data are imaged (for the supported file systems).
/progress:<on|off>	Shows or hides the progress information (percent completed). The progress is shown by default.
deploy	
/harddisk:<disk number>	Specifies the hard disk in the image.
/partition:<disk number>-<volume number>	Specifies the volumes in the image.
/target_harddisk:<disk number>	Specifies the target hard disk.
/target_partition:<volume number>	Specifies the target volume number for deploying a volume over an existing one. If this parameter is not specified, the software assumes

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	that the target volume number is the same as the volume number specified with the `/partition` parameter.
`/start:<start sector>`	Sets the start sector for deploying a volume to the unallocated space on the hard disk.
`/size:<volume size in sectors>`	Sets the new size of the volume in sectors. The size of a sector is considered to be 512 bytes, regardless of the physical sector size on the hard disk drive. For example, if you want the volume size to be 512 MB (a megabyte is 1 048 576 bytes), specify the size as follows: `/size:1048576` Specify this size even if you are using a hard disk drive with 4-KB sectors. To see the size of the volume in the master image, use the `/list` command.
`/fat16_32`	Enables the file system conversion from FAT16 to FAT32 if the volume size after deployment is likely to exceed 2 GB. Without this parameter, the deployed volume will inherit the file system from the image.
`/restore_bootable:<auto|on|off>`	Sets the rule of deployment for the master boot record (MBR) when deploying a volume (when deploying a disk, MBR is always deployed): ▪ `auto`: Deploy the MBR only when deploying an active volume that contains an operating system. Use this setting to ensure that the operating system can boot. ▪ `on`: Deploy the MBR when deploying any active volume, no matter whether the volume contains an operating system or not. ▪ `off`: Do not deploy the MBR. Use this setting, for example, to preserve the Unix boot loader.
`/type:<active|primary|logical>`	Sets the deployed volume to active, primary or logical, if possible (for example, there cannot be more than four primary volumes on a disk). Setting a volume to active always sets it to primary, but a volume that is set to primary may remain non-active. If the type is not specified, the software tries to keep the target volume type. If the target volume is active, the deployed volume is set to active. If the target volume is primary and there are other primary volumes on the disk, one of them will be set to active, and the deployed volume becomes primary. If no other primary volumes remain on the disk, the deployed volume is set to active. When deploying a volume to unallocated space, the software extracts the volume type from the image. For a primary volume, the type will be set as follows: ▪ If the target disk is the first according to BIOS and it has no other primary volumes, the deployed volume will be set to active. ▪ If the target disk is the first according to BIOS and there are other primary volumes on it, the deployed volume will be set to logical ▪ If the target disk is not the first according to BIOS, the deployed volume will be set to logical.

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/preserve_mbr	When deploying a volume over an existing one, the target volume is deleted from the disk along with its entry in the target disk's master boot record (MBR). Then, with the /preserve_mbr parameter, the deployed volume's entry will occupy the upper empty position in the target disk's MBR. Thus, the target disk's MBR is preserved. Without this parameter, the deployed volume's entry will occupy the same position as in the source disk MBR saved in the image. If the position is not empty, the existing entry will be moved to another position.
/preserve_disk_layout	When deploying an MBR disk or volume with a convertible OS, and the target drive is larger than 2 TB, the target drive is converted to GPT by default. To disable this default behavior and preserve the MBR disk layout on the deployed machine, use /preserve_disk_layout parameter. This may be useful when are deploying an image to a machine that does not support UEFI architecture and thus cannot boot from a GPT volume. This parameter is an equivalent for the deployment template option Convert disk to GPT if target disk is larger than 2 TB (p. 85).
/patching_sid	Generates a unique security identifier (SID) for the target machine. Without this parameter, the target machine will have the same SID as the master machine.
The following parameters related to licensing are effective only when booting from Acronis PXE Server. You do not need to use these parameters when booting from a physical media. Deployment is performed by using a deployment license or a machine license (p. 16). By default, the software uses a machine license only if no appropriate deployment license is found on the license server. By using the /use_deployment_license and /use_machine_license parameters, you can force a particular type of license to be used for performing the deployment. If you specify both of these parameters, their order will determine license priority. For example, if you specify /use_machine_license /use_deployment_license, the software will use a machine license; if no machine license is found on the license server, the software will use a deployment license instead.	
/license_server:<server IP address>	Specifies the IP address of Acronis Snap Deploy 4 License Server.
/use_deployment_license	Forces a deployment license to be used for deployment. If no deployment license is found, the deployment will fail. By using this parameter with the /grant_server_license parameter, you can allow a server deployment license to be taken if no workstation deployment license is found on the license server.
/use_machine_license	Forces a machine license to be used for performing the deployment. If no machine license is found, the deployment will fail. By using this parameter with the /grant_server_license parameter, you can allow a server machine license to be taken if no workstation machine license is found on the license server.
/grant_server_license	Allows a server license (p. 16) to be taken for deploying a workstation operating system (p. 15). The server license will be used if no

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	workstation license is found on the license server. By default, when you use this parameter and deploy a workstation operating system, the software uses the following priorities for licenses, from highest to lowest: 1. Deployment workstation licenses 2. Machine workstation licenses 3. Deployment server licenses 4. Machine server licenses By using this parameter with the `/use_deployment_license` parameter, the `/use_machine_license` parameter, or both, you can force a particular type of license to be used for performing the deployment or change the priorities for licenses.
To use the following parameters, you must have a license for the Universal Deploy add-on. Acronis Snap Deploy 4 License Server with the licenses must be available from the machine booted into the PE. For more details, see "What is Acronis Universal Deploy" (p. 26).	

`/ud_path:<path to driver storage>`
`/ud_username:<user name>`
`/ud_password:<password>`
	Specifies using Acronis Universal Deploy, the path to the drivers storage (in a network folder), and the user name and password to access the folder.

`/ud_driver:<inf-file name>`	Specifies using Acronis Universal Deploy, and the mass-storage driver to be installed. The driver is specified as an .inf file.
list	
`/filename:<file name>`	Displays the image content. When listing image content, volume numbers may not coincide with those in the list of disks and volumes if the image does not contain all the volumes. For example, if the image contains only volumes 2-3 and 2-5, they will be listed as 2-1 and 2-2. If the `deploy /partition` command cannot find a volume in the image by its physical number, use the `list` command to obtain the volume number in the image. Then, use the `/partition:<number in the image> /target_partition:<physical number of the target volume>` parameters. In the example above, to deploy the volume 2-5 to its original place, use: `/partition:2-2 /target_partition:2-5`
email_n	
`/email_from:<sender address>`	Specifies the e-mail address of the sender. For example: `/email_from:user@example.com`
`/email_to:<recipient address>`	Specifies the e-mail address of the recipient. For example: `/email_to:admin@example.com`

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/email_subject:<message subject>	Specifies the custom text in the subject line of the e-mail message. For example: `/email_subject:"Deployment notification"` In addition to the custom text, the subject line will include the text "[ASD4]", and the MAC address and the IP address of the machine being deployed.
/email_smtp:<SMTP server address>	Specifies the name or IP address of the outgoing (SMTP) server. For example: `/email_smtp:smtp.example.com`
/email_port:<SMTP server port>	Specifies the port of the SMTP server. For example: `/email_port:465` Without this parameter, port 25 is used.
/email_user:<SMTP server user name>	Specifies the user name to log on to the SMTP server. For example: `/email_user:user`
/email_password:<SMTP server user password>	Specifies the password to log on to the SMTP server. For example: `/email_password:MyPassWd`
/email_encryption:<no|ssl|tls>	Specifies the type of encryption that is used by the SMTP server. For example: `/email_encryption:tls` Without this parameter, no encryption is used.
email_n_test	
Use this command instead of the email_n command, with the same set of parameters, to test the configuration of e-mail notifications.	

14.1.4 Usage examples

Example 1. The following command creates an image **arc.tib** of hard disk 1, and places the image to the network folder **\\server1\folder**. The operation log file **log1.log** is saved in another network folder: **\\server2\dir**. Credentials for both network folders are provided:

```
asdcmd /create /harddisk:1 /filename:\\server1\folder\arc.tib /net_user:user1 /net_password:pw1 /log:\\server2\dir\log1.log /log_net_user:user2 /log_net_password:pw2
```

Example 2. The following command creates an image of the volume 1-2 sector-by-sector (in the raw mode) and saves the image to volume H:

```
asdcmd /create /filename:h:\raw.tib /partition:1-2 /raw /log:c:\log.txt
```

Example 3. The following command deploys the hard disk 2 from the password-protected image **1.tib** that is located in the network folder **\\server1\folder**, to the disk with the same number, 2.

```
asdcmd /deploy /filename:\\server1\folder\1.tib /password:qwerty /harddisk:2
```


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14.2 Sample scenarios

14.2.1 Deploying images assigned to target machines

Scenario

An administrator needs to deploy a different master image to each target machine.

Solution

The administrator puts the images in a shared location that can be accessed from each target machine.

The administrator renames each image according to the target machine's MAC address. The image destined to the machine with MAC address **01-02-03-04-05-06** will have the name, for example, **image-01-02-03-04-05-06.tib**.

The administrator writes a deployment script that can read the target machine's MAC address and pull an image with a name corresponding to the MAC address from the shared location. The script can be executed on any number of target machines.

Sample script

```
setlocal
SET IMG_PATH=\\image_server\images
SET TMP_DRV_LETTER=h:
net use %TMP_DRV_LETTER% %IMG_PATH%
echo off
for /f "tokens=1-13 delims= " %%a in ('ipconfig /all') do (
IF %%a EQU Physical (
for /f "tokens=1-3 delims= " %%a in ('echo %%l') do (
IF EXIST %TMP_DRV_LETTER%\%%a.tib (
echo DEPLOYMENT IMAGE file: %%a.tib
asdcmd.exe       /deploy       /filename:%TMP_DRV_LETTER%\%%a.tib       /harddisk:1
/target_partition:c
goto end
) ELSE (
echo THE IMAGE FILE %IMG_PATH%\%%a.tib NOT FOUND
)
)
)
)
:end
echo on
net use %TMP_DRV_LETTER% /d
wpeutil Reboot
endlocal
```

What this script does:

a) Mounts the network folder containing the set of images (one image corresponds to one target machine)

b) Retrieves the MAC address of the target machine

c) Generates a .tib file name (if MAC address is 01-02-03-04-05-06 then the .tib file name must be 01-02-03-04-05-06.tib)

d) Searches the network folder for an image with such name

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e) Deploys the image if found

f) Restarts or shuts down the target machine

Environment variables:

- IMG_PATH: the path to a network folder on the deployment server.
- TMP_DRV_LETTER: the mounted drive on target side.

14.2.2 Creating images assigned to target machines

Scenario

The administrator needs to create an image of each machine to be able to later roll back the system to the imaged state by deploying the image to the same machine.

Solution

The administrator creates a script that:

- Creates an image of each machine.
- Names each image according to the machine's MAC address.

The images can be deployed to the corresponding target machines (p. 142).

Sample script

```
setlocal
SET IMG_PATH=\\image_server\images
SET TMP_DRV_LETTER=h:
net use %TMP_DRV_LETTER% %IMG_PATH%
echo off
for /f "tokens=1-13 delims= " %%a in ('ipconfig /all') do (
IF %%a EQU Physical (
for /f "tokens=1-3 delims= " %%a in ('echo %%l') do (
echo IMAGE FILE: %%a.tib
asdcmd.exe /create /filename:%TMP_DRV_LETTER%\%%a.tib /harddisk:1 /compression:8
goto end
)
)
)
:end
echo on
net use %TMP_DRV_LETTER% /d
wpeutil Reboot
endlocal
```

What this script does:

a) Mounts the network folder

b) Retrieves the booted machine's MAC address

c) Generates a .tib file name (if MAC address is 01-02-03-04-05-06 then the .tib file name will be 01-02-03-04-05-06.tib)

d) Creates an image of the volume C of the machine, and saves the image to the network folder using the generated file name

e) Restarts or shuts down the machine

Environment variables:

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- IMG_PATH: the path to a network folder on the deployment server.
- TMP_DRV_LETTER: the mounted drive on target side.

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15 Collecting system information

The Acronis System Report tool collects information about a machine and saves this information to a file. You may want to provide this file when contacting Acronis technical support.

The tool is available:

- On a machine where Acronis Snap Deploy 4 Management Console is installed. The tool collects information about that machine.
- Under an Acronis bootable media. The tool collects information about the machine that is booted from the media, and saves this information to a locally-attached USB drive.

To collect system information in the management console

1. In the management console, select from the top menu **Help > Collect system information**.
2. Specify whether to split the file with system information into smaller parts. If so, specify the maximum size of such part.
3. Specify where to save the file or files.

To collect system information under an Acronis bootable media

1. Create an Acronis bootable media (p. 59). When creating the media, select the **Acronis System Report** check box in the list of components.
2. Attach a USB drive to the machine for which you want to collect information.
3. Boot that machine from the media.
4. In the boot menu, click **Acronis System Report**.

The tool saves the file with system information to the USB drive. If two or more USB drives are attached, the tool saves the file to the first such drive it finds.

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